THE IRON AGE

A Review of the Hardware, Iron and Metal Trade.

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If a sheet, or part of a sheet, of galvanized iron has any defect, send it back at jobber's or our expense—the same as when business is slow.

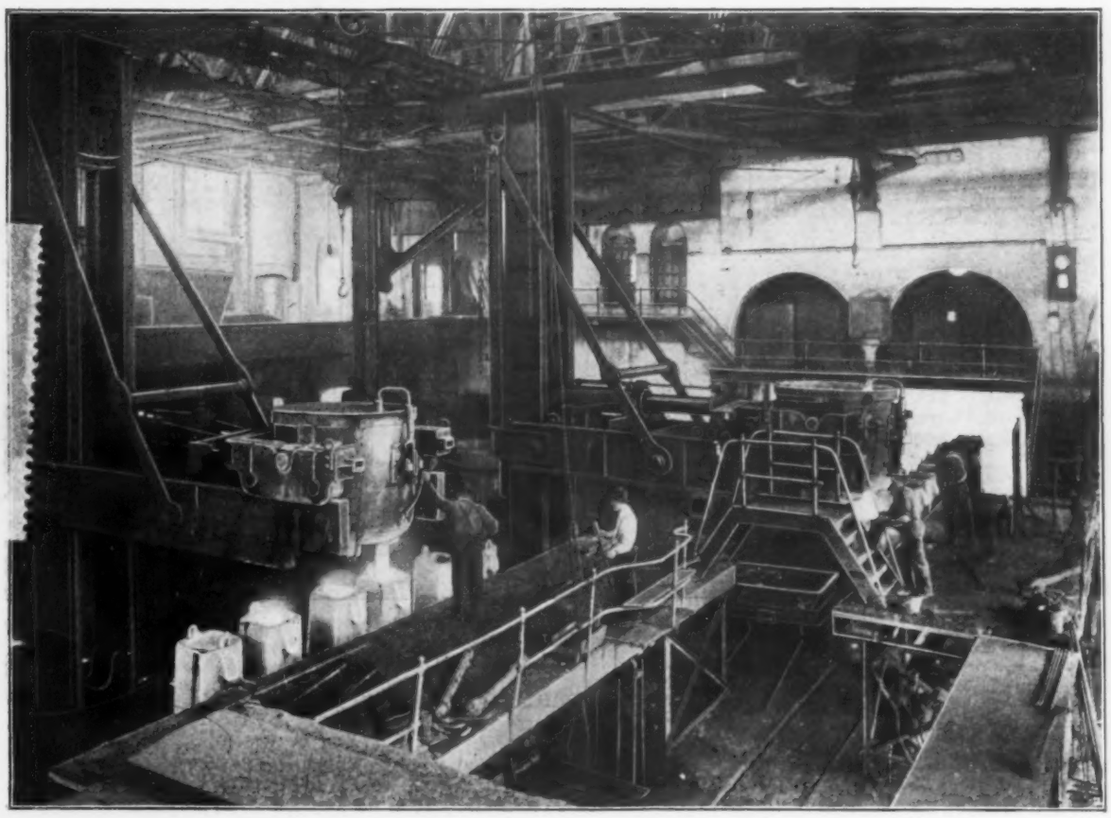
Apollo Iron and Steel Company, Pittsburgh.

THE IRON AGE.

THURSDAY, JULY 6, 1899.

The Improved South Chicago Bessemer Works.

The Bessemer works of the Illinois Steel Company at South Chicago were built according to designs prepared by Robert Forsyth in 1880. They were completed and made their first blow on June 14, 1882, since which time they have been in practically continuous operation. Until this year no radical change has been made in the casting pit, the original arrangements having been found satisfactory in this long period of practical test. As laid out in the plans, three 10-ton converters were placed in a straight row at one end of the building. An elevated railroad was built in front of the converters for the conveyance of liquid metal to them from the mixers in ladle cars. Later these vessels were changed to 14-ton capacity. No change, however, was made in the method of casting, which continued to be done in the original circular casting pit. The many advantages to be derived from casting on cars made a change desirable in this respect, and after a careful study of the requirements of the situation the company's own engineers evolved the plan shown in the accompanying illustrations. They were not only limited in space by the dimensions of the building, but were also hampered by the elevated track running along in front of the converters. Two distinct and separate casting tracks were desired, so that in case of accident one might always be available and the work of casting go on uninterruptedly. This object was finally accomplished by the use of intermediate cranes, shown on the plan, Fig. 3, as receiving cranes Nos. 1 and 2, and casting cranes, also shown as Nos. 1 and 2. The steel, after being blown and recarburized, is poured into the ladle of the receiving crane, from this ladle it is delivered to the ladle of the casting crane, and from there it is teemed into the ingot molds. Each of these cranes has a capacity of 14 tons. The casting cranes are offset in centers so that No. 2 reaches over the casting track for No. 1. The receiving cranes are so placed that each one serves two converters. Thus the whole arrangement is designed to enable the work of pouring and casting to go on continuously with part of the plant if another part should be disabled.



View of Both Casting Cranes in Position for Teeming Into Ingot Molds.

THE IMPROVED SOUTH CHICAGO BESSEMER WORKS.

These cranes are operated by hydraulic power from platforms shown on the general plan at the side and in a corner of the building. The ladles on the arms of the cranes are moved back and forth by horizontal plungers, giving them a considerable range of adjustment in that respect. On the general plan receiving crane No. 1 is shown in position before converter No. 2 to receive a heat of steel, while receiving crane No. 2 is pouring a heat from its ladle into the ladle of casting crane No. 2, and casting crane No. 1 is teeming steel from its ladle into the ingot molds. The workmen who attend to the details of filling the molds have a safe elevated passage way, or platform, as shown both on the plan and in the interior view, Fig. 1. These details are further brought out on the drawings, Figs. 4 and 5, showing longitudinal sections of the works.

The change to this method of casting was made in the

latter part of February last. All possible arrangements had been made in advance for the purpose of economizing time, and the works were shut down for only two weeks while the change was being made. It has proved highly advantageous, both in respect to the improved quality of the steel made and the increase in the product. The double pouring facilitates the desired chemical reaction after recarburizing, and produces a more uniform grade of steel, while the greater ease with which the ingot molds are handled in and out of the casting house enables the work of blowing to be pushed faster. In the month of May the production was 69,282 tons of ingots, fully 10 per cent. above the best previous record for the works with the circular casting pit.

The New Lodge-Shipley Works.

When the Lodge & Shipley Machine Tool Company felt the pressure of expanding trade and realized that they could never successfully handle their proportionate share of it in their old quarters at Culvert and Pioneer streets, Cincinnati, they took steps to procure an up to date plant. Mention has been made in *The Iron Age* from time to time of the progress of the new shops which were constructed on Colerain avenue, in what is known as the Camp Washington district of the city. The new plant has now been in operation several months, long enough to prove that it is a success in every mechanical detail. The building is 90 x 337 feet in measurement. For 40 feet back from the front it is two stories in hight, the remainder being but a single story. Lengthwise it is divided into three divisions, each of which is 30 feet in width. The lantern skylight covers the center division, while the wings of the roof shelter the side ones. The hight of the roof at the skylight is 30 feet. The windows on each side of the lantern are 9 feet in hight, and continuous from front to rear of the building. This arrangement, taken with the great number of side windows and the angle at which the roof slopes, gives a maximum of light. One of the peculiarities of the architecture is that the hangers for the shafting are incorporated into the overhead structure in a manner that does away entirely with the clumsy, overloaded, crowded effect under the old methods of hanging. When the shop was ready for the putting up of the hangers and shafting, the value of this construction was further demonstrated by the fact that it took two men only one week to put the 500 hangers into place, and that the same two men put up the entire shafting in the week following. The south division of the floor carries the lathes and other tools, the boiler and engines and heating and ventilating outfit. The north has the offices, supply departments, benches and assembling of the smaller machine tools. The center division is used as an aisle for various purposes. It is spanned by three traveling hand cranes with pneumatic hoists. The tracks were made strong enough to support heavy electric cranes in case they should ever be used.

In explaining why the hand cranes were adopted, Mr. Lodge said that it is his experience that the loss of time in handling with cranes comes from the time required in moving them from point to point, and in one set of men waiting for their turn while others are using the appliances. So this shop has three roller bearing cranes, one for the lathe department, one for the planers and the third for the erectors. All the heavy work is done on machines placed along the sides of the center aisle. Two of the cranes have a capacity of 4000 pounds each, and the third 12,000 pounds. By an arrangement of loose pulleys and clutches the power can be cut off from any portion of the shop desired without in any way interfering with other portions. After having considerable annoyance from slipping belts, the company have recently put in several Williams pneumatic pulleys.

Among the peculiarities of equipment are the number of planers, which have beds of extra length; two of these have 30 feet beds and three are 24 feet. Mr. Lodge claims a 25 per cent. saving in time and labor over the use of the ordinary short beds. The shops are plentifully supplied with Towsley trucks, which, in conection with the cranes, enable the transportation of weights with a minimum of time and labor. The plant is heated with a hot air equipment, put in by the Buffalo Forge Company, and when last winter the temperature fell to 20 degrees below zero no trouble was experienced in keeping the thermometer at 75 degrees F. For a while compressed air was used in the tempering department, but on account of the expense that method was abandoned for the use of a small Sturtevant blower, which answers the purpose as well and at a trifling cost. Every man in the shops has a number corresponding to that of the machine or station at which he works, and his key at the time clock and his supply checks are all numbered uniformly.

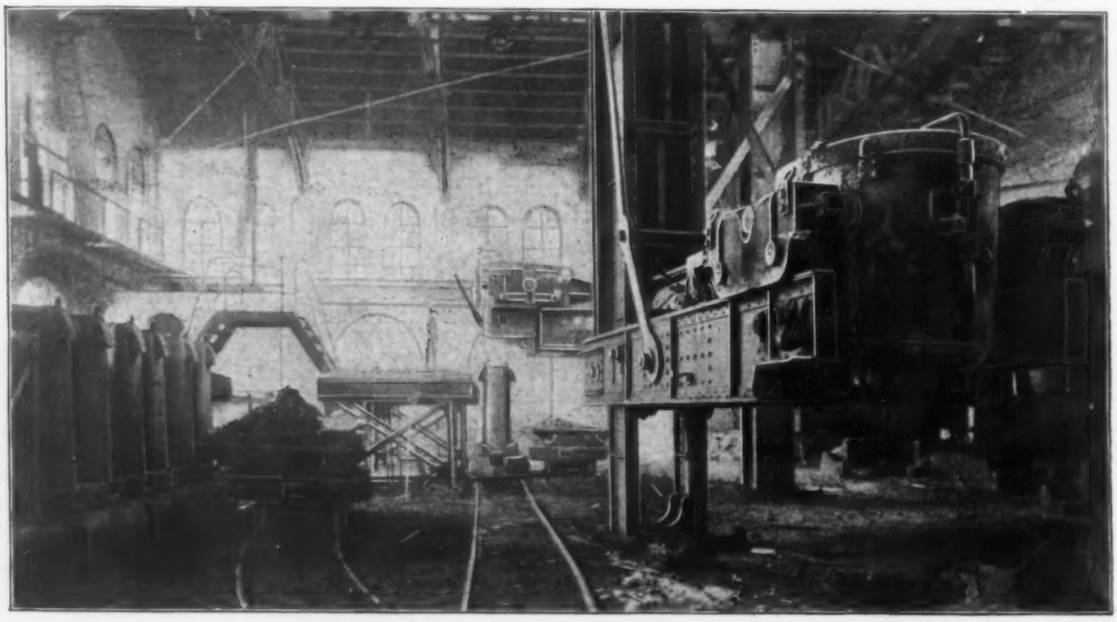


Fig. 2.—Casting Crane Swung Around After Casting.

THE IMPROVED SOUTH CHICAGO BESSEMER WORKS.

The Buffalo single vertical class A automatic engine recently exhibited at the Madison Square Garden Electrical Exhibition has been sold through the New York office of the Buffalo Forge Company to the Wilson Smokeless Coal Process Company, 11 Broadway, New York City, to be used for running a pressure blower in connection with the boiler plant of Paris World's Exposition, to be held in 1900.

The Bethlehem Steel Company announce that they are now prepared to furnish steel castings to the trade. They have every facility for doing this class of work, and their experience in Government work has peculiarily fitted them for the manufacture of steel castings of the largest dimensions and highest quality.

English and American Workmen.

The London *Engineer*, in discussing the question of the position of workmen in this country and in England, says: The volume of the trade of this country must increase; if it does not it will rapidly fall off, for there is no standing still. Now there is not sufficient labor in the country to permit of any considerable extension of producing power on present lines. Speaking not long since to the managing partner of a very large firm in the Midlands, engine and general machinery builders, he said: "I sincerely hope I shall have no more orders for months. If I get them I must refuse them. I begin to understand as I never did before how small a country England is. There are not men enough to do the work that is waiting to be done." If our readers will turn to the letters of any of our country correspondents they will see from time to time that the books of the unions show only a most trifling percentage of men "on benefit." For a considerable time past it has been next to impossible to obtain good fitters and erectors and machine minders. The chronic scarcity of molders has been intensified. There is in this country an enormous capital seeking investment. How is it, why is it, that some of this does not find its way into the construction of engineering shops? Take, again, locomotives: All the works in the kingdom are running day and night, and will run day and night for months and it may be for years. Why is it that no enterprising capitalist starts a locomotive building works? Very largely the answer to these questions is that materials cannot be obtained from which to build the new works, nor can men be got to work the tools if they were there. It is beyond question that Great Britain is just now working up to the utmost limit of her capacity as far as everything connected with steel or other metals is concerned. There is good reason to believe that in the near future there will be no slacking back and that if Great Britain cannot supply the demand other nations, and notably the United Sates, will.

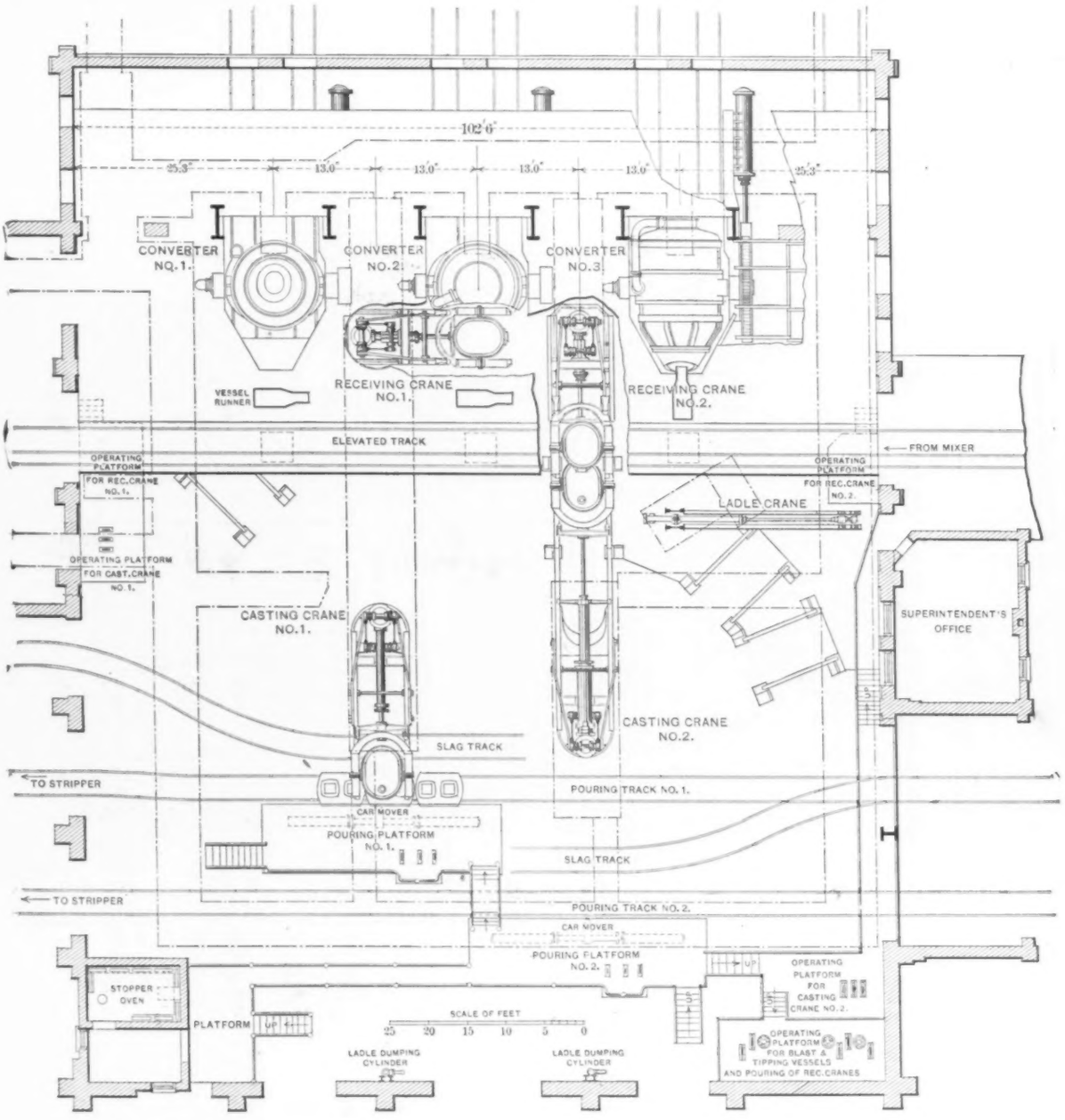


Fig. 3.—Plan Converting House.

THE IMPROVED SOUTH CHICAGO BESSEMER WORKS.

The solution of the difficulty obviously lies in augmenting our production. We must build three locomotives where we now build two, and so on; but this can only be done by augmenting the productive power of the workmen. We cannot put on three men where there are now two; machinery must come to our aid. It was stated during the recent conference that a machine riveting plant, as used in Newport News in the United States, will save 50 per cent. in labor. This means that one man will do the work done by two men now. Experimental plant of the kind is now on its way, we understand, to the Clyde. If it answers expectations the union will be asked to say what action it proposes to take. We shall not be surprised if the men refuse to have it. Such a policy will

of course, in the long run, be suicidal; and in any case the machinery will take its place in our shipyards on its merits just as all other machinery—such as the power loom and the boot making machines—comes to stay. But the question which presents itself as most pressing at this moment is not the future of any machine or system of construction, but—why should the working engineer in the United States be so different from the working engineer in this country? The curious thing is that the English and Scotch element is very strong in United States shops. It is a very great mistake to assume that American labor saving machines are the invention of American brains only. English head workmen are common in American shops, and they will do there with the greatest cheerfulness that which they would not do in this country at all. There must not only be a reason for all this but a reason that can be ascertained. Our readers may take our word for it, that it is a matter of clearly increasing importance to ascertain why it is that a workman in the United States will do almost twice as much as he will do in this country. Nobody thinks of putting this question. The English workman will tell you that it is because the American is "hustled" by nigger driving foremen. That, our readers may take our word for it, is not the case. The American works cheerfully. Is it the climate? Is it the food? Is it the social habits and life of the people? The sooner English employers address themselves to finding an answer, and if possible introducing the changes which are necessary to augment the turnout of the English workman until it equals that of the American artisan, the better. In that way and in that only can salvation be found.

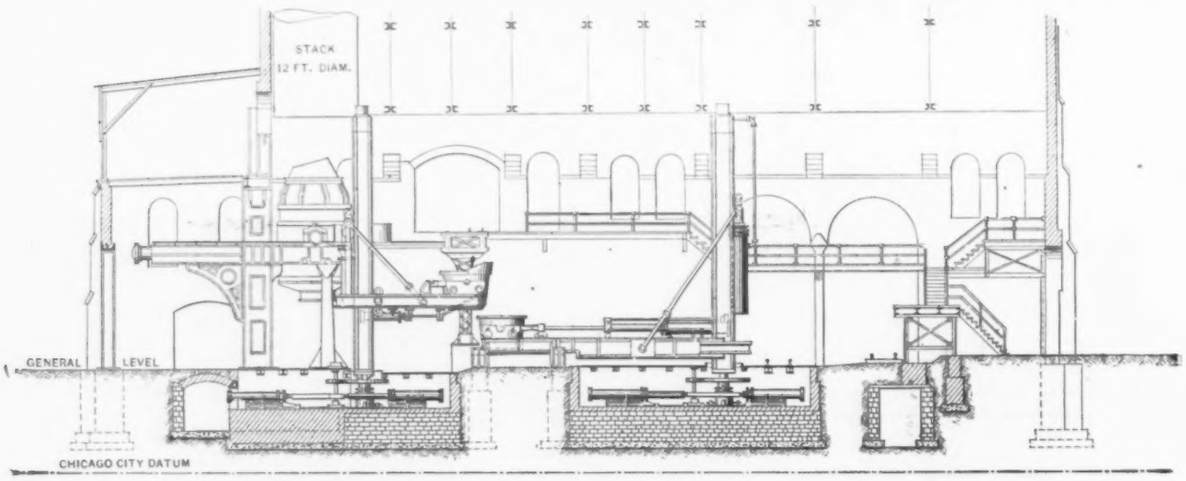


Fig. 4.—Longitudinal Section, Looking South.

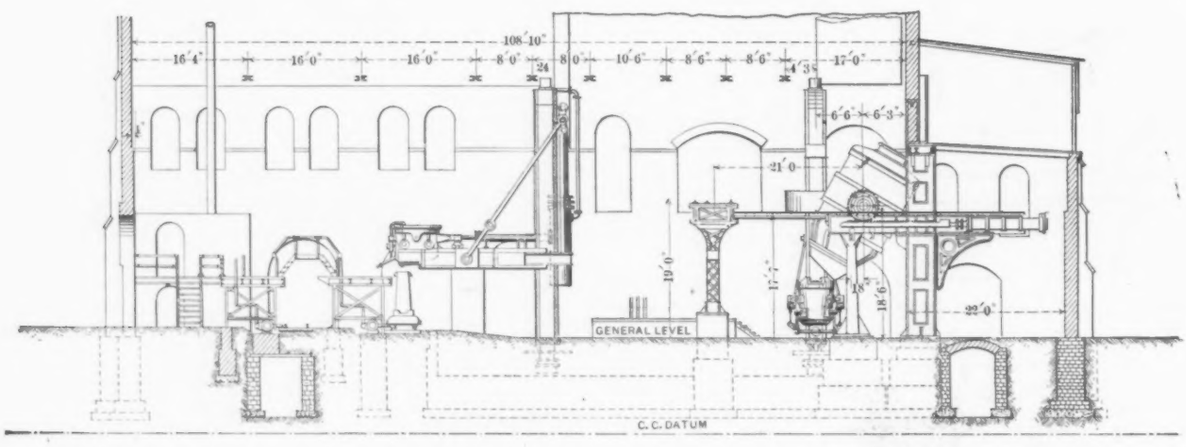


Fig. 5.—Longitudinal Section, Looking North.

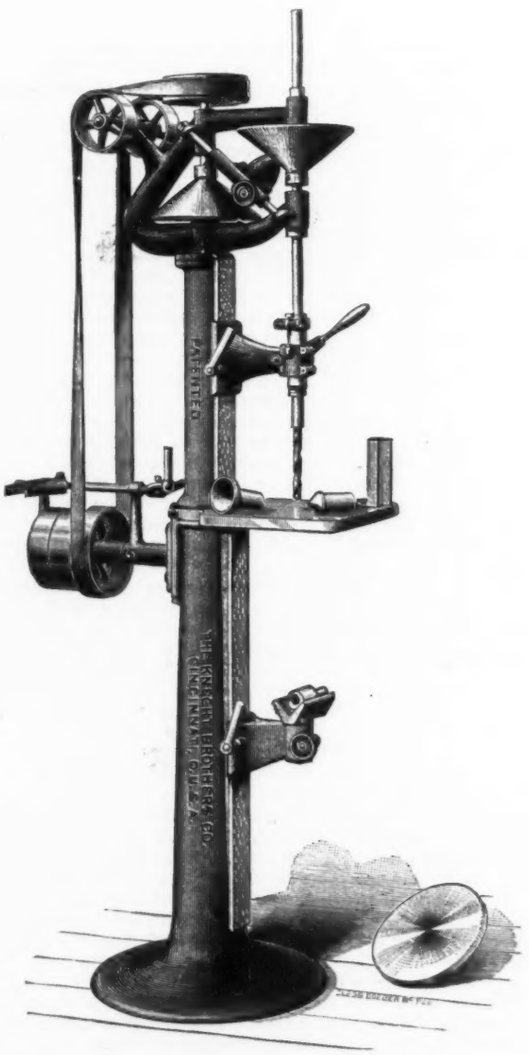
THE IMPROVED SOUTH CHICAGO BESSEMER WORKS.

The Union Boiler Tube Cleaner Company of Pittsburgh, Pa., were organized in 1895 for the purpose of introducing an entirely new industry, that of removing scale from the interiors of the tubes of water tube boilers. They are claimed to be the only concern of the kind having machinery especially designed for their specific business, patented abroad as well as in this country, by which they are enabled to contract for cleaning boilers under a time limit with bond for heavy penalty for nonfulfillment, or to sell or lease tools for cleaning all makes of water tube boilers having straight, horizontally inclined or vertical tubes and those having curved tubes, such as the Climax, Stirling, also the Hazelton, having closed end tubes; the latter three types being heretofore considered difficult to clean. Although they started in 1895 with a well equipped factory they are constantly enlarging their works, putting in additional machinery, and have more than doubled their force of workmen since the first of the year in their endeavors to keep up with orders. They have a flexible shaft which is unique in its way; having been compelled to design one to enable them to clean boilers having curved or other tubes inaccessible for a stiff rod.

The Chicago & Aurora Smelting & Refining Company Aurora, Ill., now a part of the American Smelting & Refining Company, have abandoned the manufacture of babbitt metal, excepting to fill a few orders on hand, although they had made a specialty of the manufacture of this material for engines, rolling mill works, &c. C. H. Reeves, Jr., who was in charge of this department, has therefore resigned his former position and become identified with Merchant & Co., Incorporated, of Philadelphia, New York and Chicago. Merchant & Co., Incorporated, have been operating smelting works for some years in Philadelphia, and have always been active in the manufacture of babbitt metals, and are now in a position to supply the trade with identically the same grades of babbitt metal as that which has been produced by the Chicago & Aurora Smelting & Refining Company.

The Knecht Friction Sensitive Drill.

The driving mechanism of the sensitive drill built by the Knecht Bros. Company of Cincinnati consists of two cones between which is held a friction roller. The power is transmitted from the lower cone to the friction roller, which transfers it to the upper or spindle cone. The roller is adjustable radially with the cones. The speed of the spindle is increased or diminished instantly, without stopping the machine or shifting the belts, by simply sliding the friction roller frame from one extreme to the other, a distance of only 4½ inches. Any speed required by a drill of any size may thus be obtained. More or less driving power may be applied to the spindle as the size of the drill or nature of the work may require. The tension of the friction roller between the cones can be adjusted as required by turning the head adjusting nut under the lower cone, making enough power to turn the drill used. If for any reason the drill should bind, the roller will slip and thereby stop the spindle. This is an important provision for obviating the danger of breaking drills in metal of different degrees of hardness. The cone that drives the spindle is mounted on a sleeve or bushing, which extends through both bearings in the frame, the spindle being relieved thereby from any lateral pressure. This spindle sleeve or bushing has ball thrust bearings. On the bar on which the friction roller frame slides are marked the sizes of drills within the range of the machine, so that the operator can

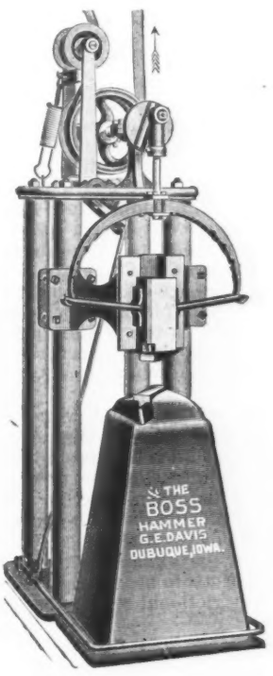


THE KNECHT FRICTION SENSITIVE DRILL.

get the proper speed for any drill without loss of time. This allows the operation of the machine to the best advantage in running the speed of the drills at best efficiency. There are graduations on the sleeve passing through the spindle head, indicating the depth to be drilled. The stop used on the spindle sleeve may be readily removed when not in use. It can be set so as to drill any number of holes a fixed depth without referring to the graduations on the sleeve. The machine is driven by an endless belt, and provision is made for taking up the slack. The square table can be swung aside so that work can be held on the lower knee. The main dimensions are: From column to center of spindle, 6½ inches; maximum distance from end of spindle to round table, 42 inches; vertical adjustment of round table, 28 inches; vertical adjustment of spindle head, 13 inches; throw of spindle, 3 15-16 inches; size of holes drilled, 0 to 9-16 inch; total hight, 6 feet 4 inches, and floor space, 20 x 34 inches.

Blacksmiths' Power Hammer.

The Novelty Iron Works of Dubuque, Iowa, have designed the Boss blacksmiths' power hammer, here shown. It is intended particularly for work too heavy



BLACKSMITH'S POWER HAMMER.

for hand but not of a character to require much power. It can be operated with 1 horse-power. It occupies a space of 24 x 46 inches, is 6 feet in hight and its shipping weight is 1000 pounds. The hammer head weighs 40 pounds, will accommodate dies for a great variety of work and is arranged to run in planed guides, thus being capable of doing rapid and accurate work. The length of stroke is adjustable, as is also the space between the hammer and the anvil. The anvil is separate from the machine and is solid enough for all requirements. The dies are set diagonally, so as to accommodate work of extra width or length. The tightener is reversible, so that the hammer may be driven on either side of the line shaft without crossing the belt. The hammer stops instantly and at the highest part of the stroke, being under full controll at all times in its speed, force of blow, stopping or starting. The machine will forge iron of any size up to 2½ inches thick without adjustment.

The fifth annual convention of the National Association of Manufacturers is to be held in Boston next spring, and a meeting of the New England vice-presidents of the association was held at the Exchange Club, Boston, recently, in response to an invitation sent out by George T. Coppins, vice-president for the State of Massachusetts. Plans for the convention were discussed in a general way, and it was decided to recommend to the Executive Committee of the association that the convention should be held during the third week of May, 1900. Steps were taken to arrange details and to inaugurate a general movement throughout New England to increase the membership of the association so that this section of the country shall be more fully represented when the convention is held. Mr. Coppins was made chairman of the General Committee of Arrangements, the other members, of which are George A. Draper, L. O. Garrett, E. B. Pike, M. H. Tarbox and Arthur H. Low.

According to a customs circular of the India Office hoop steel, galvanized, is assessed for duty on importation into British India at 1 per cent. ad valorem.

The Utilization of Furnace Gas for Power.—II.

A second paper read before the Verein Deutscher Eisenhuettenleute was that of Professor E. Meyer of Goettingen, who dealt with the subject from the standpoint of the maker of the gas engine.

He introduced his remarks with a general discussion of the arrangement of that type of gas engine which was prevalent at the time when the question of utilizing blast furnace gases for the production of power first came up. Fig. 1 shows a sketch to illustrate the general type. The cylinder of the motor, closed at the forward end, has two openings at the back end in the cylinder head closed by two valves. Through one of them an explosive mixture of gas and water is introduced into the cylinder while the piston is moving upward from the inner dead center, this constituting the first cycle. While the air is drawn in the gas at the same time flows into it from a point immediately in front of the air valve as soon as the third valve, the gas valve, opens the gas supply pipe entering into the air supply. When the piston has reached its outer point the air and gas valves are closed, so that when the piston returns, making the second cycle, the mixture is compressed. Then when the piston has again reached its inner dead center the compressed mixture is ignited by an electric spark. It burns suddenly under evolution of a high temperature and high pressure, the piston is driven outward with great force, forming the third cycle, the products of combustion expanding. When the piston returns, making the fourth cycle, the products of combustion are exhausted into the air through the exhaust valve. The piston, now having reached its inner dead center, begins the whole cycle over again by drawing in a fresh supply of mixture of air and gas. This is the principle on which the four-cycle motor is based.

The card is shown in Fig. 2. Since the mixture is drawn in the pressure is below that of the atmosphere on account of the resistance in pipes and in valves. During the period of compression the pressure rises to five to six atmospheres, and when ignition or explosion takes place to 15 to 25 atmospheres. The expansion line then follows. At the end of the latter the point may be readily observed at which the exhaust valve opens, since the pressure suddenly drops to nearly that of the atmosphere, but since there is a frictional resistance in the valves and

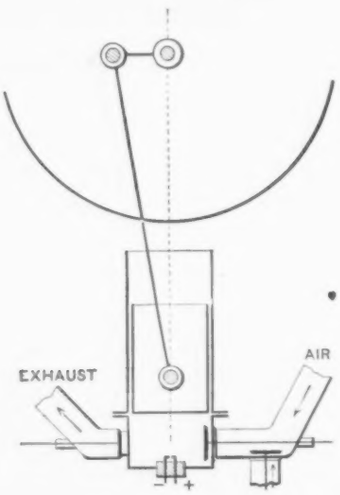


Fig. 1.—Four-Cycle Gas Engine.

pipes the line is only one-tenth to two-tenths atmosphere above the atmospheric line. Therefore there is in the card a positive area of work obtained and a negative area of work lost, the difference between the two furnishing a measure for the indicated work done by the engine.

In order to utilize as much as possible the temperature developed through the explosion in the gas engine, and in that manner secure as low a consumption of gas as possible, the card in the gas motor must be given as favorable a form as possible and all losses of work must be reduced. The most favorable form of card is obtained when the combustion either takes place entirely at the dead center or at least during the first eighth of the stroke. The most important consideration is the degree of compression. The more the explosive mixture is compressed during the second cycle the lower is the gas consumption, other conditions being equal. This is being recognized more and more in recent years, and the tendency has been toward an increased compression; but since during that compression the temperature of the compressed mixture goes on increasing there is some danger that when excessive pressures are reached the mixture may be prematurely ignited, or a sudden ignition may lead to serious blows. This limits the upper range of the compression.

Loss of work grows out of the resistance in the admission and in the exhaust, they amounting to about 5 to 8 per cent. of the total work produced. Then there is the loss of heat through the cylinder walls, which must be cooled with water so that the valves may be kept tight and the lubrication may be secured. The loss due to this source of waste is about 15 to 30 per cent. of the theoretical work. A third source of waste is incomplete combustion of the gas employed. This occurs only

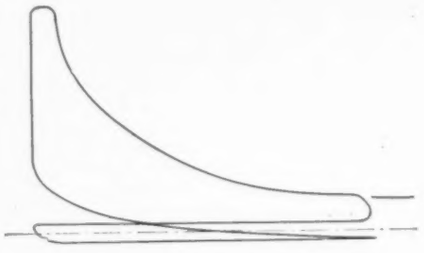


Fig. 2.—Diagram of Four-Cycle Gas Engine.

when the mixture of gas and air is not complete. It is difficult, however, to so provide for the mixing that during the short time available every particle of gas meets the adequate quantity of air. In order to attain this the stream of gas must enter the stream of air during admission, and a subsequent injection of gas with the aid of a gas pump into the cylinder which is already filled with air must always lead to incomplete combustion.

A number of difficulties were expected in operating gas engines with blast furnace gas. Above all, fear was expressed as to the difficulty of igniting furnace gas, which often burns but poorly under steam boilers; but in compressing gas and air mixtures—an operation which goes on during the second cycle—a means is available to cause a certain ignition of even very weak gas. This is due to the fact that the temperature rises as the compression increases, and the latter may therefore be carried on until the temperature of ignition is almost reached. Then the passage of an electric spark secures ignition with certainty. In the case of furnace gas, however, compression may be carried on a good deal further than it is with illuminating or producer gas without running the risk of premature ignition and accompanying shocks. The low calorific value of producer gas—from 900 to 1000 heat units—would, it was feared, lead to unusually large dimensions of the cylinders; but while 1 c. m. of illuminating gas requires for its combustion in the cylinder of a gas engine an average of 7 c. m. of air, 1 c. m. of furnace gas calls for only 1 c. m. of air. In a cylinder having a capacity of 8 c. m. there would, therefore be only 1 c. m. of illuminating gas, but 4 c. m. of furnace gas would find a place in it with the requisite volume of air for combustion. Although, therefore, the calorific value of furnace gas is only one-fifth that of illuminating gas, the development of heat in the cylinder —and this is what measures the amount of work done— is at least four-fifths as great in the case of furnace gas as it is with illuminating gas. In other words, using furnace gas about 20 per cent. less of heat is developed, and therefore about 20 per cent. less of work is done in the same cylinder as compared with the use of illuminating gas. This theoretical consideration is borne out by experience, since a 120 horse-power illuminating gas engine, when driven with furnace gas, developed about 100 horse-power. Small fluctuations in the calorific value of furnace gas do not affect the maximum power developed by a motor, as shown by the above theoretical consideration and by actual experience. Besides it appears that the fluctuations in the calorific value of furnace gas are very light in current practice. According to Professor Meyer's experiments at Differdingen the fluctuations measured by a Junker calorimeter amounted to only about 4 per cent. from the average. The calorific value was 950 heat units per cubic meter at Differdingen; it was 960 at Oberhausen and 950 at Hoerde, both referred to zero and 760 mm. barometer.

The fluctuation in the pressure of furnace gas is met by interposing a holder into which the gas is driven by means of a steam injector or is carried through by suction. A 60 horse-power motor at Oberhausen and an 880 horse-power engine at Seraing, according to local authorities, worked well even when the gas holder was cut out.

The point which above all calls for more light through practical results is the purification of gas from dust. It must be taken into consideration at the outstart that the gas engine of itself counteracts in a most effective way the settlement of dust on its cylinder walls, since the gas is whirled about during the explosion and during the exhaust. It has been proven even now that an adequate purification of the gas meets with no serious difficulty, and it is only a question as to the size of the necessary apparatus, on which experience has not passed a final verdict and on which opinions still differ.

As it is done in the case of purifying illuminating and producer gas coke scrubbers and sawdust purifiers are usually employed. In the Thwaite purifying apparatus an electrical appliance is added. In the axis of a vertical iron pipe of about 5 m. in hight a barbed wire is hung up. With the aid of a small electrical machine sparks are made to jump from this barbed wire to the walls of the pipe through which the gas to be purified flows. This, it is stated, separates the metallic dust. Such an apparatus would, therefore, only be necessary where such metallic dust is carried along by the furnace gas.

dust as possible out of the hot blast stoves and boilers. According to the magnitude and general arrangement of this part of the plant the purification before the engine must differ. At Differdingen, where the gases carry very little dust with them, and where, furthermore, they are thoroughly cleaned at the furnace, any further purification before the engine is absolutely unnecessary. It must be taken into consideration, however, that with a smaller motor plant, which takes very little gas from the main supply, even a smaller proportion of dust is carried into the motor pipes than would be the case with a large plant in which the entire supply of gas available must flow into the engine pipe alone. The gas at Seraing carries a good deal of dust, and after leaving the furnace is cleaned but very little. If the operation of the gas engine is possible there, even without preliminary heating, then that is due to the fact that during the last fall the cylinder head of the gas engine was so redesigned that as little dust as possible can settle in it, and that it is easily expelled by the exhaust. It is a general fact, too, that different systems and designs of gas engines vary very much in their sensitiveness to furnace dust, and it is

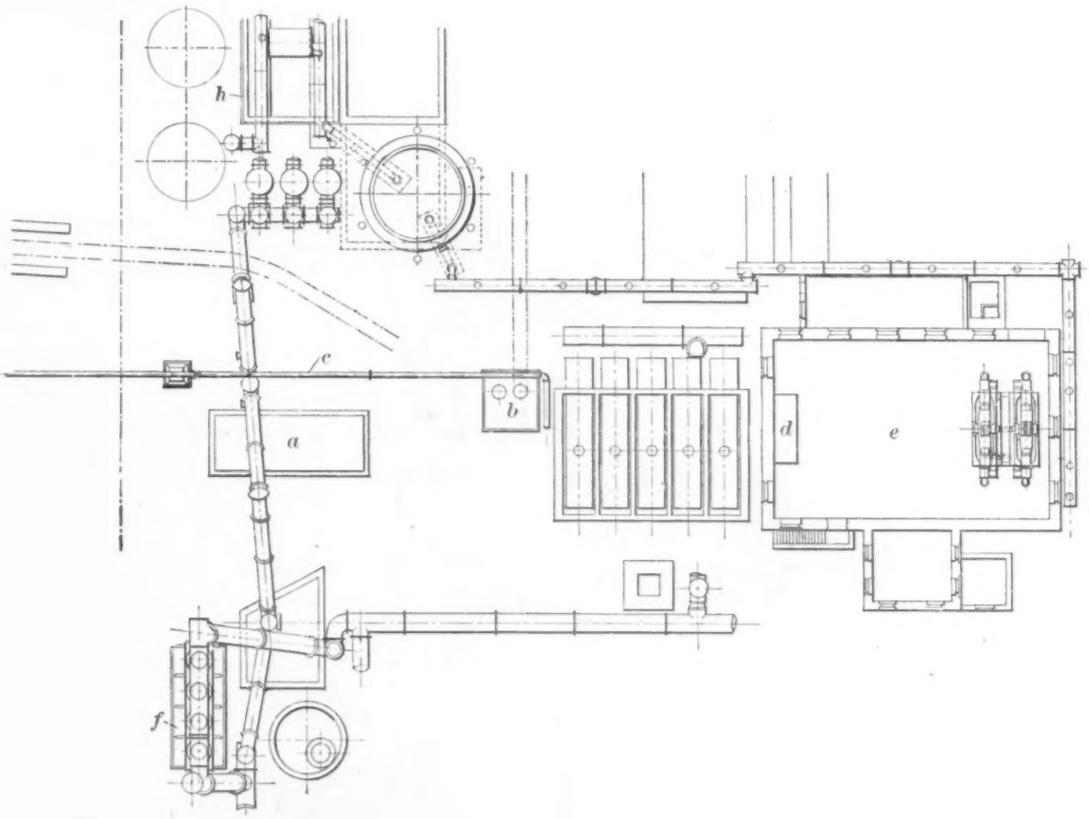


Fig. 3.—Six Hundred H.-P. Gas Engine Plant at Oberhausen.—b, Power Station for Coal Haulage.—c, Steam Pipe.—d, Switch Board—e, 600 H.-P. Gas Engine Driving Electric Plant of 3000 Volts.—f, Gas Washing Plant.—h, Purification Plant.

A purification plant as used for the 600 horse-power motor at Oberhausen is shown in Fig. 3. It includes three coke scrubbers and four cleaning boxes filled with coke breeze. According to experience obtained with the 60 horse-power motor water is not used in this purification plant. At other works, too, the gas is cleaned even when the water sprays attached to the coke scrubbers are cut off, and the purification is done alone by dry method. At other places wet purification is considered necessary. The 60 horse-power furnace gas motor at Differdingen has thus far been run without any previous purification of the gas. The same is true of the 180 horse-power motor at the Cockerill Works, at Seraing, which have been running since last fall, day and night, without any previous purification of the gas. During that time neither the piston nor the valves have been taken out. I myself have seen the interior of the engine, and have satisfied myself that only a very thin and dry accretion has been formed. When these facts are compared with the experience of other works, where a large purification plant is considered absolutely necessary, the following considerations are worthy of study. Furnace gases carry with them very varying amounts of dust, according to the character of the burden, the blast pressure, &c. Immediately after passing from the blast furnace the gases at the different works are submitted to a varying amount of purification in order to keep as much

an important matter in designing the engine to reduce this sensitiveness as much as possible. It is true that only years of practice will demonstrate to what extent purification is absolutely necessary and whether with well cleaned gas the life of the engine is not greater than it is with unpurified gas. The impression certainly is derived from the study of present experiences that gas engines may be supplied with furnace gas as readily as with illuminating or producer gas, that the compression may be driven to a higher point without there being any occasion to fear great or disagreeable pressure, premature ignitions or blows. My experiments made at Differdingen showed that 30 per cent. of the heat units in furnace gas may be converted into indicated horsepower in a gas engine.

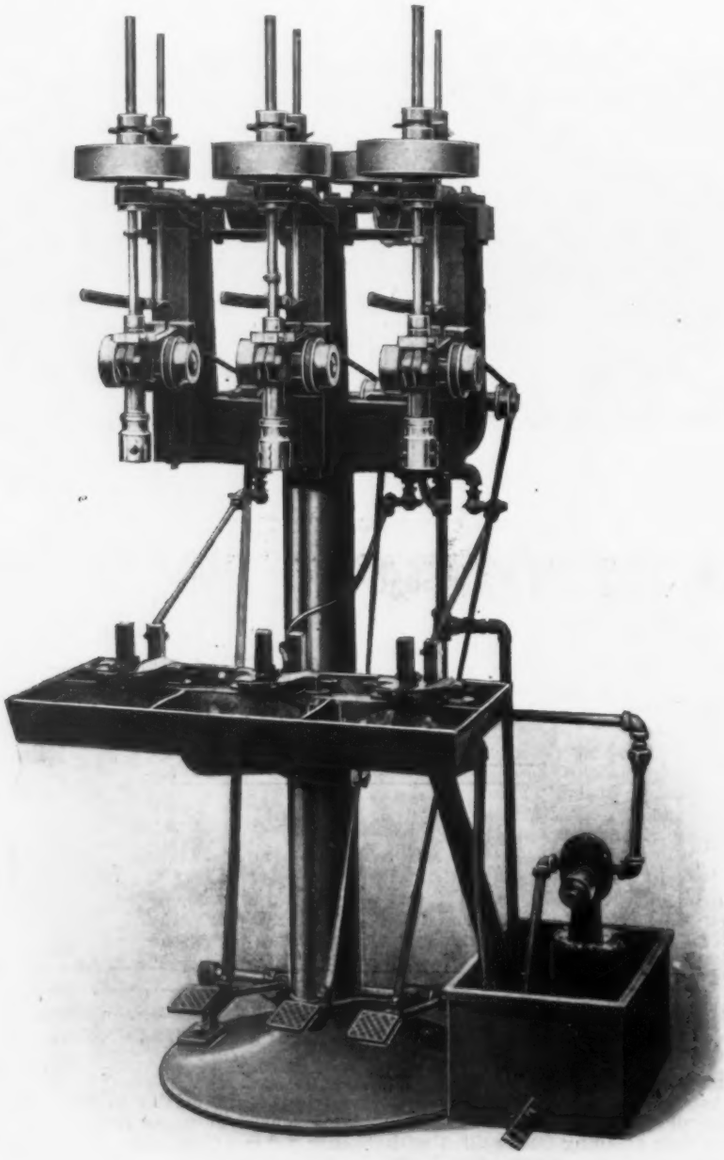
Therefore the most difficult problem for the gas engine makers to solve is to produce these engines, thus far built in relatively small units, of a size and of a type fully adequate to the requirements of the blast furnace industry. As may be readily understood, there are difficulties involved in building very large gas engines. Since there is only one working stroke in the four cycles the dimensions of the cylinders become very large. In order to attain uniformity of operation very large fly wheels must be employed. During the explosion temperatures are reached above 1500 degrees Celsius, so that the cylinder walls must be cooled. When, however, the cylinder

dimensions grow it becomes increasingly difficult to cool the inner parts of the engine by lowering the temperatures of the cylinder walls. Then there are the differences in the expansion through heat of the different parts of the cylinders, the large valves are easily warped, &c. During the last years, however, these difficulties have been more and more overcome. Cylinders developing 150 horse-power are now running steadily. As it seems that engines of from 500 to 1000 horse-power are entirely adequate for the requirements of the metallurgical industries, the work of building such engines has already begun. At the Deutz works engines are being built of which each cylinder represents 250 horse-power. Two such cylinders placed at opposite sides of the same shaft yield a 500 horse-power engine, and finally two such motors have been placed side by side to obtain a 1000 horse-power engine, the fly wheel or the dynamo being placed between them. It is true that then the engine has four cylinders, but this is the case also with 1000 horse-power steam engines. The cylinders are so placed that one is always on the working cycle, so that uniformity of operation of the engine is made possible without excessively heavy fly wheels.

A site for the proposed plant of the Gruson Iron Works has not been selected as yet. Several points on the New Jersey coast and on Staten Island are under consideration, and it is expected that a decision will be arrived at before the end of this month. As soon as the location has been decided the erection of the plant will be pushed vigorously. The offices of Capt. A. E. Piorkowski, secretary of the company, are located at 31 Nassau street.

The Anthony-Bates Upright Tapper.

The Anthony-Bates Machine Company of Worcester, Mass., have designed and built the upright tapping machine here illustrated. The machine is belt driven from the countershaft, one belt driving all the spindles. Each spindle is provided with a lever, fork and clutch, by means of which each can be operated independently and stopped instantly. Also each spindle is furnished with a universal clutch for holding the square shank of the tap, and with a sliding head and length of tap can be used without changing the position of the pan, which can be raised or lowered as required. By attaching a reversible head tap holder to the spindle the machine may be used for general tapping, and by reversing the tension spring on the pinion gear of any spindle it can be used for drilling at the same time. The holder for the nuts consists of two hardened steel guides, which are long enough to carry the nuts clear of the thread nut taps, thus preventing breakage. The guides are fastened to two way pieces used to guide the nuts under the tap, which is adjustable to any size of nuts. The machine will tap 8000 ⅜ hexagonal nuts in ten hours.



THE ANTHONY-BATES UPRIGHT TAPPER.

At a letting of cast iron pipe for Cincinnati, Ohio, recently, bids were submitted for two lots. On one of 950 tons, chiefly 60-inch, the United States Cast Iron Pipe Company bid $27.50, while the Camden Iron Works of Philadelphia bid $33 per ton. On the second lot, of about 5172 tons, the United States Cast Iron Pipe Company bid $30.50 and the Camden Iron Works $26 per ton.

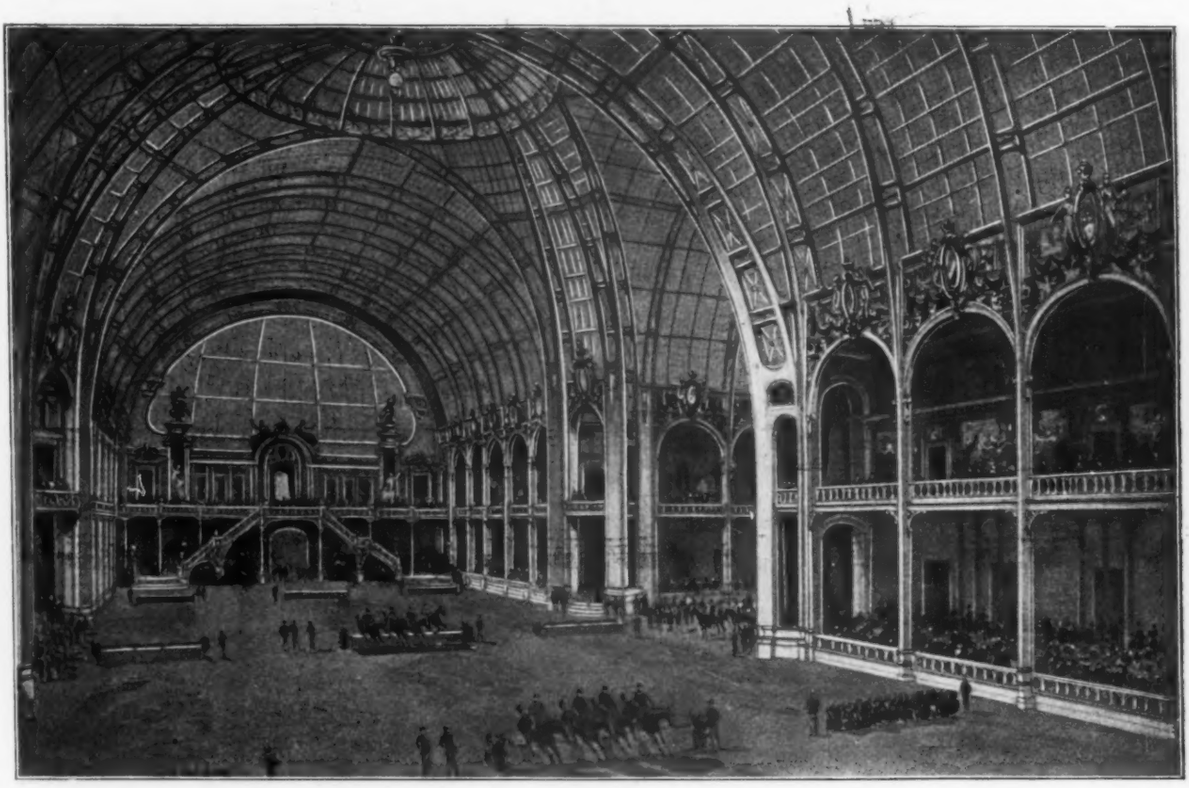
The Paris Exposition of 1900.

We have received from Paris a series of photographs of wash drawings which furnish a good conception of some of the principal features of the Paris Exposition, which is to be held next year. Architecturally the greatest group is to be the new buildings near the Champs Elysees, comprising the Grand Palace of Fine Arts and the Small Palace of Fine Arts. The magnitude of the former is well illustrated by the two pictures shown, with the general view of the structure. Both of these buildings are to be permanent additions to the architecture of Paris.

Near them, crossing the Seine, is the famous Alexander III Bridge, of which French engineers and architects are deservedly proud.

We present also a picture of the Seine looking up stream over the series of palaces and pavilions of foreign powers on the left, and the exhibition buildings for horticulture and agriculture on the right, with the Eiffel Tower and the Trocadero in the distance.

The Grand Palace.



Nave of the Grand Palace.

VIEWS OF THE PARIS EXPOSITION OF 1900.

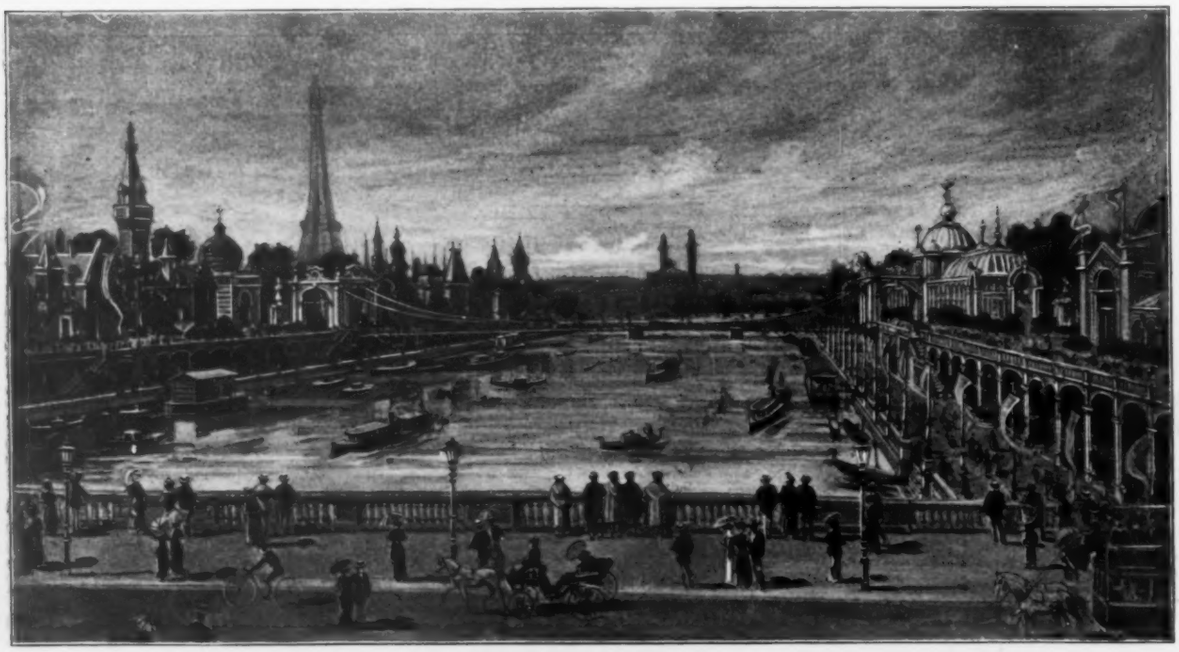
The members of the Central Plow Steel Company, composed of manufacturers of soft center plow steel made in Pittsburgh, on Friday, June 30, decided to continue the company for an indefinite period. W. H. Singer was elected chairman; Jas. W. Brown, vice-chairman, and Thos. Penrose, secretary, treasurer and general manager.

W. J. Carlin, Pittsburgh, Pa., has opened offices in rooms 610 and 611 Lewis Block, Pittsburgh, where he will continue the business of buying and selling iron and steel plants, rolling mill machinery, steam shovels and general contractors' outfits.

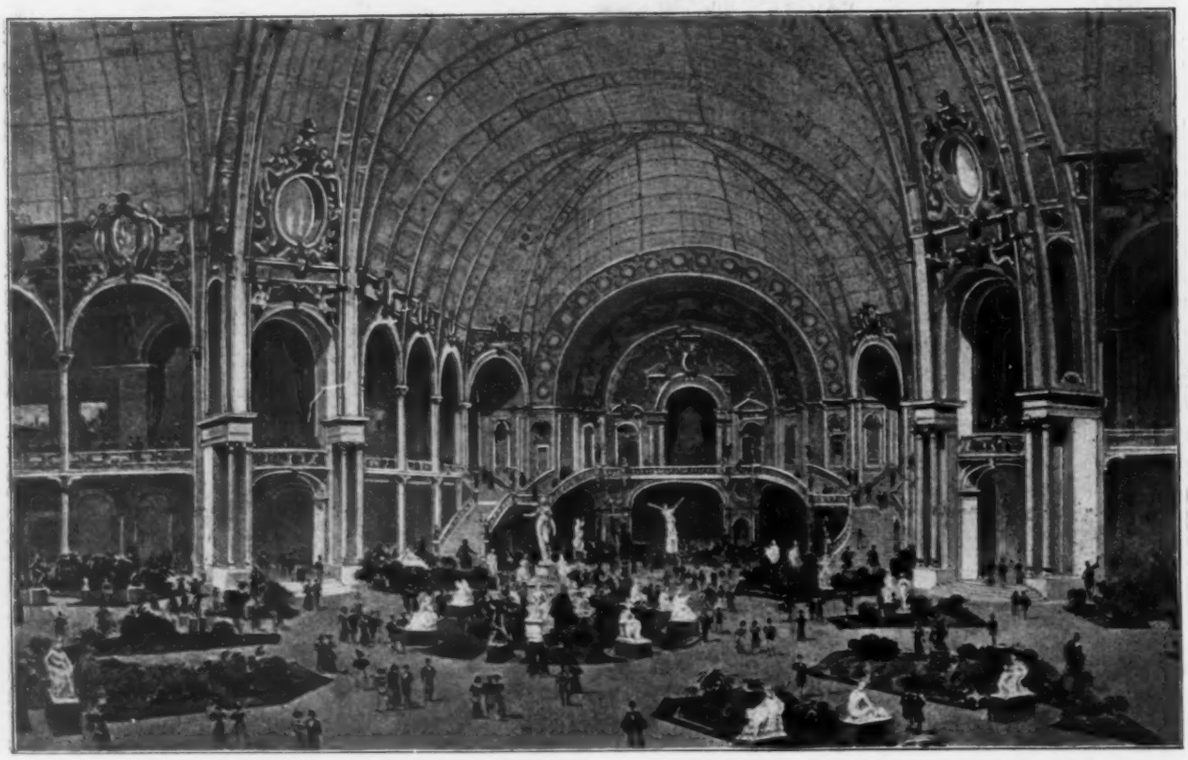
Pennsylvania's Iron and Steel Industry.

The annual report of Capt. James M. Clark, chief of the Pennsylvania State Bureau of Industrial Statistics, just completed for the calendar year 1898, shows that the production of pig iron in Pennsylvania during the year was 5,367,979 gross tons, the value of which was $53,331,228. The number of working people employed in the pig iron industry was 11,911 and the average daily wages $1.32. There were produced during the year in that State 3,357,784 gross tons of Bessemer steel, while the total steel production was 5,275,984 gross tons. The total production of steel billets and puddle bar was 5,537,249 net tons and its value $136,820,442. The number of working people employed in this industry in the State was 56,230 and their average yearly earnings were $496.81.

Eighteen of the 20 tin plate works in Pennsylvania engaged in the manufacture of black plate were in operation during the year and produced 344,064,000 pounds of black plate, or about 44 per cent. of the entire production of the United States. Of this production 222,528,000 pounds were tinned. The number of people employed in this industry was 5036 and their average yearly earnings were $584.58. Pennsylvania's total production of tin and tin plate in 1898 was 261,934,000 pounds.



View of the River Seine.



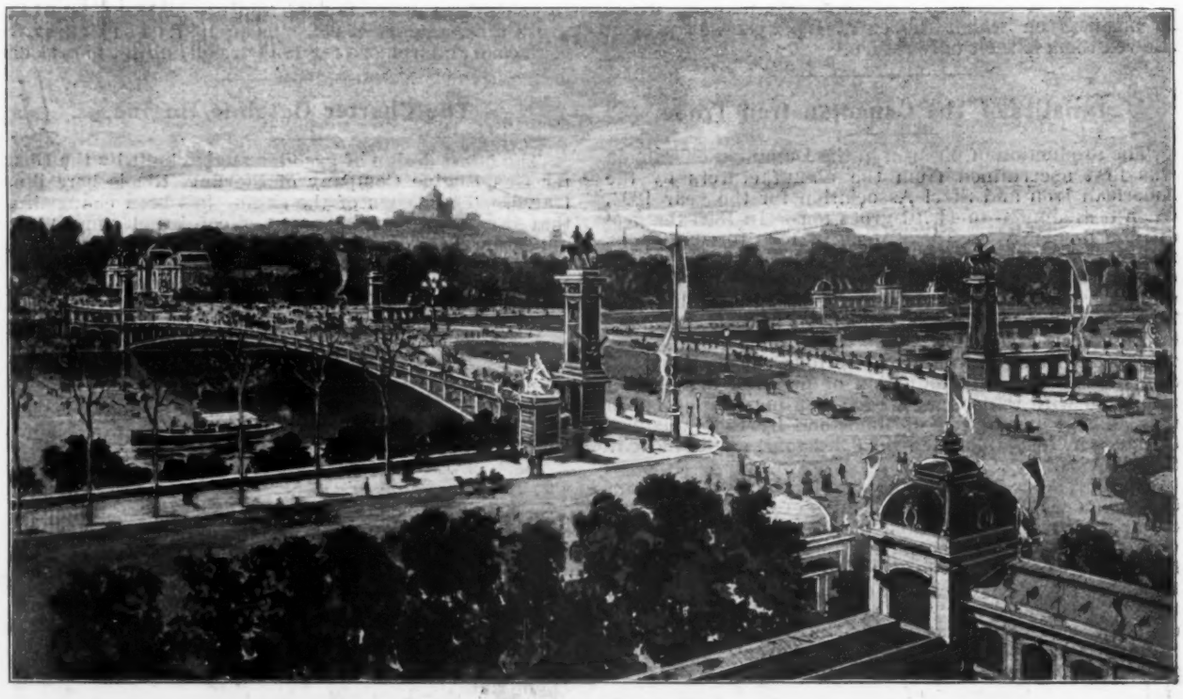
Nave of the Grand Palace.

VIEWS OF THE PARIS EXPOSITION OF 1900.

During the month of June the ore receipts at Ashtabula, Ohio, were 527,354 tons. The total receipts for the first six months of the year were 822,355 tons, an increase of 11,502 tons over the same period of last year.

The Discount System in the English Iron Trade.

A circular has just been issued by the Midland Iron and Steel Trades Association inviting the opinion of the trade throughout the country upon the question of the abolition of discounts. It is pointed out that English and American firms are already charging net for pig iron and that the principal argument of the iron merchants against the proposal rests on a basis similar to that employed by the iron masters last June in their ineffective opposition to the action of the coal owners. Members of the trade are asked to express their opinion upon the following points: 1. Shall discounts be abolished altogether? 2. Or only partially—viz., on all accounts paid at latest on tenth of the month following delivery? 3. Should the extra 1 per cent. to merchants be withdrawn? 4. What, in your opinion, should be the maximum discounts (if any) for prompt cash against invoice? 5. Should usual discounts and promise of payment be continued to export merchants? Strong opposition is offered to the proposal by the merchants, who, it is stated, would prefer to pay a little extra price rather than have the discounts abolished altogether. Of a large number of manufacturers who have sent in their replies 90 per cent. answer the first question with an unequivocal affirmative. All of the remainder are in favor of a revision of the present basis, and only one replies to question 1 with a direct negative. The Scotch Iron Manufacturers' Association, having met to consider the subject, passed a resolution in favor of the abolition of discounts on accounts not paid by the tenth of the month following delivery, and further condemned the payment of an extra 1 per cent. to merchants. Their feeling was that ½ per cent. should be the maximum discount for prompt cash against invoice, and that net cash against documents should be the terms to export merchants. The South Yorkshire Bar Iron Association has



Perspective of the Alexander III Bridge.

The Small Palace.

VIEWS OF THE PARIS EXPOSITION OF 1900.

forwarded the following resolution, adopted at a meeting at which the circular was submitted: "That this association, representing an output of 3500 to 4000 tons of finished iron and steel per week, is in favor of the principle of net prices being established." Of the circulars issued nearly two-thirds have already elicited a definite response, and it is understood that the next step will be to call a meeting of the trade, which will presumably be attended by accredited representatives from all the districts concerned. There are indications that the proposed revision will be strenuously resisted both by manufacturers who consume bar iron and by the merchants, many of whom do business on which the extra 1 per cent. at present allowed them is their only return.

Statistics of the Canadian Iron Trade.

The production of pig iron in the Dominion of Canada was first ascertained from the manufacturers by the American Iron and Steel Association for the year 1894, when it amounted to 44,791 gross tons. In 1895 the production amounted to 37,829 tons, in 1896 to 60,030 tons and in 1897 to 53,796 tons. In 1898 the production amounted to 68,755 tons, of which about one-eleventh was charcoal pig iron, the remainder being coke iron. The production of Bessemer pig iron in 1898, included in the figures given above, was 10,200 tons, and the production of basic pig iron was 9100 tons, all made by one company. The total production of pig iron in 1898, as compared with that of 1897, shows an increase of 14,959 tons. The consumption of limestone by the Canadian furnaces in 1898 amounted to 30,302 tons, against 27,957 tons in 1897.

On December 31, 1898, the unsold stocks of pig iron in Canada which were in the hands of the manufacturers or their agents amounted to 9979 tons, as compared with 20,265 tons on December 31, 1897, 29,320 tons on December 31, 1896, and 17,800 tons on December 31, 1895. Of the unsold pig iron on hand on December 31, 1898, about four-fifths was charcoal pig iron, the remainder being coke iron.

Canada did not produce any spiegeleisen or ferromanganese in 1897 or 1898, although some time ago the Mineral Products Company of Hillsboro, New Brunswick, leased the Bridgeville Furnace, at Bridgeville, Nova Scotia, for this purpose and expected to have the furnace in operation in 1898. The company did not blow in the furnace, however, until May 11, 1899. The ferromanganese is made from briquettes of manganese ore. The annual capacity of the furnace is about 7300 gross tons.

On December 31, 1898, there were nine completed blast furnaces in the Dominion, and of this number three were in blast and six were out of blast on the date named. On December 31, 1897, there were eight completed furnaces, of which four were in blast and four were idle. In the spring of 1898 the Deseronto Iron Company, Limited, began building a charcoal furnace at Deseronto, in the Province of Ontario, which they completed in December of that year. The furnace was blown in on January 25, 1899. It is now making about 1000 tons of pig iron per month from Lake Superior ores.

The imports of pig iron into Canada in the fiscal year ending June 30, 1898, amounted to 35,812 tons, of which 2009 tons were charcoal pig iron and 33,803 tons were other grades. In 1897 the imports of pig iron amounted to 25,650 tons, of which 2622 tons were charcoal and 23,028 tons were other grades.

The production of crude steel, steel castings and all kinds of iron and steel rolled into finished forms in Canada in 1898 is given approximately below, full reports or careful estimates having been received by us from all the manufacturers in the Dominion.

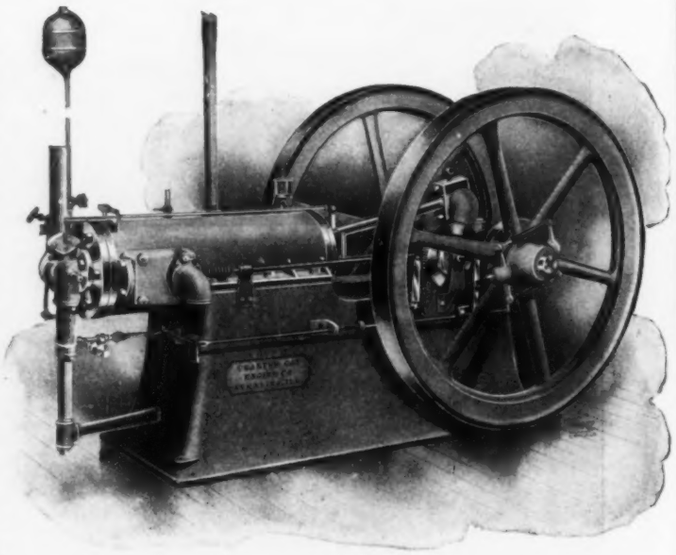
The production of Bessemer and of basic and acid open hearth steel ingots and castings in 1898 was 21,540 gross tons, against 18,400 tons in 1897, 16,000 tons in 1896 and 17,000 tons in 1895. Of the total production of open hearth steel in 1898 a little more than one-half was made by the acid process. The production of open hearth steel rails in 1898 amounted to 600 tons, against 500 tons in 1897; structural shapes, 1565 tons, against 4300 tons in 1897; cut nails made by rolling mills and steel works having cut nail factories connected with their plants, 152,688 kegs of 100 pounds, against 202,939 kegs in 1897; plates and sheets, about 1000 tons, against about 2000 tons in 1897; all other rolled products, excluding muck and scrap bar, blooms, billets, sheet bars, &c., 80,322 tons, against 61,161 tons in 1897. Changing the cut nail production from kegs to gross tons of 2240 pounds, the total quantity of all kinds of iron and steel rolled into finished products in the Dominion in 1898, excluding muck and scrap bar, billets and other intermediate products, amounted to 90,303 tons, against 77,021 tons in 1897, 75,043 tons in 1896 and 66,402 tons in 1895.

The total number of rolling mills and steel works in Canada on December 31, 1898, was 18. Of this number at least four were idle during the whole of 1898. Canada has only one steel casting plant, which is equipped with a 3000-pound modified acid Bessemer converter. Its first castings were produced in 1897. Canada also has one open hearth acid and basic steel plant.

The production of coal in the Dominion of Canada in 1898 is reported to have amounted to 3,725,585 gross tons, against 3,380,453 tons in 1897. The production of coke, all made in Nova Scotia and British Columbia, amounted to 64,682 gross tons in 1898, against 54,184 tons in 1897. The production of iron ore in 1898 was 51,929 gross tons, against 45,272 tons in 1897. The figures for coal, coke and iron ore for 1898 are all subject to revision.

The Charter Gasoline Engine.

The latest design of gasoline engine built by the Charter Gas Engine Company of Sterling, Ill., is here illustrated. The design of the engine has been changed, so that it now presents a more graceful and symmetrical appearance, but the principle underlying the construction remains the same. Each engine is provided with both a Bunsen burner and tube igniter and an electric igniter. The governor gives only as much gasoline, and at the right time, as is needed to do the work. When less than full work is done only as many charges are admitted and ignited as are needed to keep up the regular speed of the engine. When the engine is working to its full capacity the governor gives a charge at every other stroke. The regulation is remarkably close. If desired, a pump is provided for raising the gasoline from a tank below the engine and outside of the building.



THE CHARTER GASOLINE ENGINE.

The New York Shipbuilding Company.

President Henry G. Morse of the New York Shipbuilding Company has issued an official statement announcing that the company have completed a contract for the purchase of over 120 acres at the lower end of Camden., N. J., opposite Philadelphia, for the construction of their proposed plant. The statement announces that there will be a water frontage of 3500 feet and a depth of 40 feet at low tide along the entire front, and that over 7000 tons of steel have been purchased for the construction of the buildings, about 3000 tons of which have been rolled and delivered at the Pottstown Bridge Company's works at Pottstown, Pa., which concern were purchased some time ago by parties interested in the shipbuilding company. Work on the new plant was started this week.

Last week a number of orders were closed for machinery to be used in the new furnace and steel plant which is being built by the Japanese Government. The general manager of the works and two of the engineers have started for Europe, but placed an order for a Wellman open hearth charging machine, for cranes with the Morgan Engineering Company and for some equipments with the Brown Hoisting & Conveying Company.

The Army Rapid Fire Gun Contract.

WASHINGTON, July 3, 1899.—The Secretary of War on the appeal of the contractors affected has practically reversed the ruling of Assistant Secretary Meiklejohn, reported in these columns last week, the effect of which was to throw out the bid of the Driggs-Seabury Gun & Ammunition Company upon a new contract, on the ground that the company was already in arrears on a previous contract. The action of the Assistant Secretary was taken during the absence of Secretary Alger, and was officially announced as establishing a precedent for the Government of all contractors doing business with the War Department. Upon the Secretary's return the Driggs-Seabury Company filed a written protest and secured an oral hearing,which was also participated in by the American Ordnance Company, the only other bidder on the new contract referred to, with the result that the new contract has been awarded to the Driggs- Seabury Company, although the Secretary of War affirms Mr. Meiklejohn's order, so far as it gives notice that hereafter penalties accruing under contracts shall be collected, unless waived by the Secretary of War upon a formal petition setting forth the facts upon which the application for relief is based, sustained by due proof. The hearing given the contesting companies was held on the 30th ult., before the Secretary and the Assistant Secretary.

The representatives of the American Ordnance Company, after presenting a detailed statement of the facts concerning the contracts referred to, submitted the following argument in support of their contention that the bid of the Driggs-Seabury Gun & Ammunition Company should be thrown out:

"We beg to respectfully invite your attention to the fact that under the first contract for the manufacture of 20 6-pounder and 80 15-pounder guns and mounts with 300 hundred rounds of loaded ammunition per gun, delivery of which, under the contract, was to begin within 60 days after the date of contract and to be completed on or about April 13, 1899, not a single gun, mount or round of ammunition has been delivered down to the present time. Furthermore, the 15-pounders, being a new type of gun, a type test is essential. But not even a gun has, so far as we are advised, passed the test.

"According to the terms of the contract penalties accrued to the estimated amount of more than $200,000, but we are advised that the Ordnance Department remitted all such penalties down to June 5, 1899, the date of the order of Acting Secretary Meiklejohn, which order forbade the remission of penalties in the future except by order of the Secretary of War.

"The bid for the second contract by the Driggs-Seabury Company was not above the actual cost of manufacture. Being already in default under a much larger contract they must have well known the importance of delivering the ordnance within the time required. Having already a Government contract for $700,000 of ordnance the prospect of the award of another for $200,000 was well advertised in the public press, it is believed, for the purpose of improving their financial standing in the commercial world.

"That the recklessness with which the Driggs-Seabury Company have entered into contracts may be more clearly shown, we respectfully submit the following list of contracts, wherein, we are advised, that the company have made default:

"1. Contract date, September, 1897, for 1270 8-inch, 10-inch and 12-inch armor piercing projectiles. Value of contract about $150,000. Only about 35 projectiles were ever delivered, and the time limit of contract exceeded ten months.

"2. Contract date about April, 1898, for 400 7-inch mortar shells. Value of contract, $44,000. This contract was rescinded when the Ordnance Department became convinced that delivery was hopeless.

"3. Contract date, April 15, 1898, for 100 guns with carriages and 300 rounds of ammunition per gun. Value of contract about $700,000. Contract time expired April 13, 1899, without a single delivery having been made.

"4. Order dated about December, 1897, for an experimental 3.2-inch gun carriage. This should have been delivered more than a year ago, but has not, we are advised, yet been delivered.

"Therefore, while the Driggs-Seabury Company have received orders from the Ordnance Department within the past two years aggregating $1,250,000. It is at present in default to an extent of $850,000. There has been rescinded $44,000, and of the remaining amount fully $75,000 was sub-contracted, so that of this value of $1,250,000 there has not been delivered as much as $200,000 worth of the work done by the Driggs-Seabury Company, all of which has been of the lightest machine character.

"The Driggs-Seabury Company have simply trifled with the Department for more than 12 months. They have been and are to-day prolific in promises and in exploiting their affairs in the newspapers, but in the matter of expediting guns, mounts and ammunition they have been barren in performance.

"So far as we have been able to ascertain the Driggs-Seabury Company have never since their organization furnished a gun or mount to the War or Navy Department.

"During the past two years the American Ordnance Company have furnished 488 guns to the War and Navy Departments and the Revenue Marine.

"It is believed there is a limit beyond which the Driggs-Seabury Company or any other company should not be permitted to impose upon the Department, and we further believe that that limit has been reached and passed.

"In view of the absolute incompetency of the Driggs-Seabury Company, as shown in the report of the Chief of Ordnance, and in justice to the manufacturers of ordnance who are able to carry out their contracts, it is respectfully submitted that if there be error in the decision of Acting Secretary Meiklejohn it is because he should have decided that the Driggs-Seabury Company were not a competent bidder for the second contract, and he should have decided that the contract be awarded the American Ordnance Company, instead of deciding that new bids should be called for.

"As to the statements so adroitly put forth in the press that the American Ordnance Company are a trust concern, those statements are hereby declared to be wickedly and maliciously false. The American Ordnance Company are in no sense directly or indirectly a trust corporation."

The defense of the Driggs-Seabury Company is based chiefly upon the contention that much time has been lost due to changes in specifications made by the Department and also to the difficulty of obtaining material, owing to the activity of the iron and steel market. The letter submitted by this company was as follows:

"Our contract of last year for the making of 20 6-pounder and 80 15-pounder guns and mounts was made upon designs for guns and mounts submitted by us at that time, showing fully and in detail the guns and mounts which we designed and undertook to furnish. Since that contract was made and in conformity with the understanding upon which it was entered into, there have been numerous details in which it has been altered and modified. Among these we would more particularly specify the following:

"The shape and dimensions of the powder chamber of the 15-pounder guns was left undetermined, but later a new design was presented to us with the caution that these were to be the subject of further consideration upon the results which should be obtained from the first gun of that type produced. This question has not yet been determined and the detailed provisions in the way of tools, &c., for the making of the cartridge cases have been necessarily delayed.

"The original requirements called for bronze embracing conflicting and irreconcilable qualities. It was found that the mixture required and specified could not possibly give the results required. We have lost time and money in endeavoring to do the impossible in this respect, and only at the end of April last, when repeated experiments had demonstrated this impossibility, were the requirements modified so as to make it physically possible to fulfill them.

"In the matter of making mounts it was found impossible to obtain iron castings meeting the requirements. We therefore made from our steel foundry steel castings to take their place, and these steel castings were at least 100 per cent. better than the iron castings which the contract required us to furnish. But these steel castings were passed upon not as filling the requirements for the iron castings of the contract, but as if we had undertaken in the contract to furnish steel castings of the general standard of steel castings for ordnance work, regardless of the fact that our contract only called for certain qualities of cast iron which they far exceeded.

"In the matter of the projectiles the designs have changed and rechanged from those under which our contract was made, and this after our tools had been made for their manufacture. As regards shrapnel we have had experimental shrapnel made in conformity with the designs under which the order was given and have not as yet had any decision announced as to whether that or some different form is to be required. There are many other respects in matter of detail in which it yet remains to be decided whether our original designs as submitted and accepted in the acceptance of our bid should be adhered to or should be modified.

"In all these particulars we wish it to be distinctly understood that we are not to be considered as finding any fault with, or putting any blame upon, the Bureau or Ordnance. That Bureau and our company have been, so far as we have known, in perfect accord and have been working together to develop these new types of

guns, mounts and ammunition to the utmost degree of perfection and efficiency, in the best interests of the service, realizing together that this result was the one to be aimed at and the one which could best conduce to the object of supplying our country with the best possible armament and equipment for the national defenses.

"We may add that these expectations have thus far been reasonably gratified. We must say without exaggeration that our guns and mounts as tested at Sandy Hook have demonstrated their superiority and have commended themselves to the officers of the Board which has had their test in charge. We have at the present day a well equipped plant for turning out all the work required. This plant has cost us hundreds of thousands of dollars. We have spared no expense to make it, and believe it to be more perfect than any in the country. It is in a high state of efficiency, and the work upon all the branches of this original order is progressing most satisfactorily under the close inspection of the officers of the Bureau of Ordnance. Whatever the delay has been, while caused in part by the difficulty of procuring machinery and material during the great rush which followed the outbreak of the war with Spain, it has been more largely due to our purpose to make the results most satisfactory in every way, and to work out both in design and in detail material for the equipment of the country's defenses in every respect superior to any that has been known before and superior to that employed by any other country

"Now we come to the subject of the 80-gun contract. This we undertook at a price about $70,000 below the next lowest bidder. We were told in April last that the contract was ours—as it was in view of our being the lowest bidder—and upon the strength of this we at once ordered additional machinery and set about putting up the additional buildings to enable us to perform it satisfactorily at an expense of upward of $20,000. It will certainly be a gross injustice if this contract thus lawfully awarded to us, on the faith of which we have already incurred beyond recall this additional expense, shall now be refused us. We are willing and desirous of being subject to the fullest and closest inspection (to which in fact we have already been subject) as to our ability to perform the contract. And while we have been brought temporarily to a standstill by the announcement contained in your communication, and have lost both valuable time and considerable money by reason thereof, we must earnestly and solemnly protest against any action which may deny to us the benefit of our undertaking. It will be a gross injustice to our company and a gross impairment of the faith which every one ought to feel free to repose in the action of the Government of the United States through its accredited agents.

"Furthermore, if we are denied this contract thus lawfully awarded to us on our bid of $70,000 below our lowest competitor, of what use will it be for us to put in another bid under a new advertisement? The action of the Department in rejecting our bid and throwing the contract open to new competition will, under such circumstances, be tantamount to refusing any bid from us and awarding the contract to some one else."

After careful consideration of the facts in the case Secretary Alger, under date of July 1, made the following endorsement on the papers in the case:

"Respectfully returned to the Chief of Ordnance.

"Let so much of the order made by the Acting Secretary of War on June 5, 1899, as required the setting aside of the bids submitted under advertisement therefor, dated February 27, 1899, and opened March 13, 1899, being proposals for the manufacture of 40 6-pounder and 40 15-pounder rapid fire guns, be modified and amended so as to permit the consideration of said bids and an award of contract thereon. The fact that one of said bidders—the Driggs-Seabury Gun & Ammunition Company—are in default under a contract with this Department of date of April 15, 1898, is not to be considered in awarding the contract herein; but such omission to consider said default shall not be construed as a waiver thereof.

"It is therefore directed that the contract for the manufacture of said guns be awarded to the Driggs-Seabury Gun & Ammunition Company under their bid herein, with provisions as to penalties the same as those in the contract of this company with the United States, through the Chief of Ordnance, dated April 15, 1898, and that delivery of these guns shall begin within three months from the date of said contract, as provided in the proposals of February 27, 1899. The contract shall be executed with at least two surety companies, who have complied with Army Regulation 577.

"The said order of the Acting Secretary of War is otherwise sustained and affirmed, and penalties accruing under contracts for the manufacture of guns and ammunitions of war, from June 5, 1899, the date of the order of the Acting Secretary of War, shall be collected from contractors unless waived by the Secretary of War upon a petition filed in the War Department setting forth the facts upon which the application for waiver of penalties is based, sustained by due proof showing that the contractors are equitably entitled to relief." W. L. C.

A Blast Furnace for Toronto.

On the 28th inst. Louis Schilling of Salem, Ohio, and J. W. Seaver of Cleveland, Ohio, visited Toronto to discuss the question of establishing a furnace and eventually steel works. One of Mr. Seaver's engineers came with him as far as Hamilton, where he is to commence the construction of the new steel plant of the Hamilton Blast Furnace Company. They spent the greater part of the day with the Assessment Commissioner, who is the city's negotiator in respect to such matters. Several possible sites were visited and one was decided upon as suitable. The promoters ask exemption from city taxation for 20 years. Should Toronto and the promoters agree work would be commenced in 30 days upon the construction of a furnace of a daily capacity of 200 tons. The syndicate represented is said to be in a position to organize into a company of $1,000,000 capital at once, and is composed largely of Americans with whom a few Canadians are associated. Such, at all events, is what is given out. Correspondence between the promoters and the Assessment Commissioner has been going on for several weeks. It appears that the syndicate has purchased the well known magnetic ore deposits near Hull, Quebec, and that it has acquired certain hematite properties in Eastern Ontario.

The Halifax correspondent of the Montreal *Star* states, on the word of a member of the Nova Scotia Legislature, that a second company are about to launch into the steel and iron business in Cape Breton on a scale equal to that of the Dominion Steel & Iron Company. Nor, it seems, is this the only other enterprise of the kind projected. There are two others in an embryotic state. The second company propose to start not in Sydney but in North Sydney. Ore is to be brought from Newfoundland.

It has been decided by the War Department at Washington that no concessions of any kind will be granted in Porto Rico and that the whole matter of concessions and applications for concessions will be referred to Congress at its next session. It was announced, however, that persons can make improvements of a public nature upon their own property, such as the building of wharves and piers, where such improvements do not interfere with the rights of others.

The report of the coinage at the United States Mint in Philadelphia for the fiscal year ended June 30, 1899, shows the value to be $60,794,401, of which amount $49,919,180 was in gold, $9,918 311 in silver and $956,910 in other metals. The total number of pieces coined was 90,525,570.

The Machinery Export Company of New York City have been incorporated with a capital of $50,000, the directors named being James Leggatt of Montreal and Harry I. Skilton and Julius M. Ferguson of New York.

Severe floods in the Brazos Valley of Texas have inflicted a property damage of more than $4,000,000, as well as considerable loss of life. Railroad tracks and bridges were destroyed to a large extent and interruption of communication is very general throughout the district.

Advices from Austin, Texas, report the Rio Grande as having the greatest flood known in 40 years. The flood has caused the river to change its course at several points, transferring thousands of acres of Mexican territory to the United States, while at one point a large tract of United States territory has been cut off and landed in Mexico. The old Mexican town of Carrizo, which had a population of 1200, has been washed away completely, and thousands of acres of irrigated crops have been destroyed. Some lives are reported as lost.

Official announcement was made in London that the negotiations for the amalgamation of the interests of Vicker's Sons & Maxim of Sheffield, England, and the William Cramp & Sons Ship & Engine Building Company of Philadelphia have fallen through. It is said that the first named firm made an offer of $90 a share for the stock of the Cramps, which was refused.

The production of pig iron in Russia is reported to have been 1,990,000 metric tons in 1898, of which 57,000 tons was in the Northern district, 668,000 tons in the Oural, 172,400 tons in the Moscow district, 757,000 tons in the South, 27,000 tons in the Southwest, 229,000 tons in Poland and 81,000 tons in Siberia.

The Iron Age.

New York, Thursday, July 6, 1899.

DAVID WILLIAMS COMPANY, - - - - - - PUBLISHERS.
CHARLES KIRCHHOFF, - - - - - - - EDITOR.
GEO. W. COPE, - - - - - - - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS, - - - - - - - HARDWARE EDITOR.
JOHN S. KING, - - - - - - - - BUSINESS MANAGER.

The Approaching Iron Famine.

The predicted shortage in pig iron is beginning to be felt, particularly in foundry irons in the West. Instances are coming to light of foundries being obliged to shut down for several days awaiting receipts of needed raw material. So far it is believed that the trouble has been caused by the non-arrival of special brands desired for the usual mixture on which the foundry has been running or to the deferring of purchases a little too long to secure shipments in time to insure steady operation. But it is nevertheless a fact to be considered that the stoppage of foundries for lack of any kind of pig iron is a new experience in the trade which points to further trouble of the same character. While many consumers of iron are forehanded and are extremely careful not to run short in any part of their supply, a considerable percentage will always fight advancing prices and will buy from hand to mouth, expecting continually to be able to do better for themselves a little later. These are the people who are paying premiums for immediate delivery and are thus running up prices beyond the quotations at which time contracts can be made. Enough of them are found in every iron consuming center to give increasing strength to a naturally strong market. From present appearances it will not be long until the slow buyers shall have taken all the available supply of pig iron without regard to brand and the famine will then be appreciated in earnest.

Much inconvenience is being experienced in other branches of trade by reason of the extraordinary pressure for iron and steel. Work is being delayed on bridges and buildings because essential parts are not being delivered in time. It also extends into small wares, manufacturers using malleable castings being obliged to wait unreasonably long for the delivery of pieces needed to finish work which they have in hand. Annoyances of this character are being seriously felt in the hardware trade. Those who are still skeptical about an iron famine need only to interview a few manufacturers and consumers to unearth convincing evidence.

There is one danger to establishments of moderate size in the concentration of power in the hands of consolidations which has not been dwelt upon and that grows out of the possibility of special rates of freight. In large transactions these are naturally subject to special negotiations, and there are good reasons why low rates are granted. A shipper who is in a position to deliver on the tracks of a road, day after day, whole train loads of material, by doing his own switching performs a valuable service for which he is entitled to consideration. In some instances shippers have gone even further. A conspicuous instance may be cited from the anthracite coal trade, where one large individual operator owns all the rolling stock needed and hauls his own cars with his own locomotives and train crews from the regions to tidewater, under a simple trackage contract. What is done in one branch of the mineral traffic may be done also, possibly in a modified form, in other branches and in certain departments of the crude or finished iron and steel industries. Small producers with limited capital would find it difficult to meet such competition.

The Tin Plate Wages Question.

The Chicago *Tribune* publishes the following editorial utterance relative to the wages disagreement in the tin plate mills:

"The workers in the American tin plate mills have demanded an advance of 20 per cent. in their wages. It is not surprising that such a demand should be made. The American Tin Plate Company, the consolidated concern who control about all the mills in the country, have put on the market great blocks of preferred and common stock, and in order to stimulate the sale of those securities have told attractive sales of the immense profits they are making. Quite naturally the wage workers would like to share in the division of those profits. Their request for higher wages has been refused. The mills will shut down July 1 and will remain closed until an agreement has been made. The company cannot afford to keep their mills closed long. To do so would play hob with their securities. Dividends could not be paid on preferred stock even. If the increase demanded by the men is granted profits will be cut into greatly, unless prices are advanced again. They have been put as high as is safe already. Probably there will be a compromise and the men will get only a part of what they have askesd for. That will mean, however, a decrease of the fund out of which dividends are to be paid on the stock of this overcapitalized concern. The holders of that stock, who bought it at prices much higher than those which obtain now, must 'view with alarm' the present state of affairs. The promoters of the combine, however, who have probably disposed of their stock for good prices, are unconcerned spectators of the trials and tribulations of the concern they organized."

A paper of such standing as the *Tribune* should by all means be fair. It can be opposed to such industrial consolidations as the American Tin Plate Company if it chooses, and can denounce them and their promoters in the most vigorous English at the com mand of its editors, but in doing so its statements should be in line with the facts, and the public ought not to be misled. The natural inference drawn from this paragraph by a reader of the *Tribune* who looks upon it with respect and believes everything he reads in its columns would be that the American Tin Plate Company have absolutely denied any advance in wages to their men. This is not the case. They have expressed their willingness to make the same advance in their rolling mills as that asked for and secured by the workmen in the merchant sheet mills, whose work is of a similar character. As the sheet mill men were satisfied with an advance of 11 per cent., the men rolling sheets for tinning appear to be somewhat exacting, to say the least, when they ask for an advance of 20 per cent. It further happens that three months ago an advance of 8 per cent. was voluntarily made in the wages of the men in the tin plate mills, who were not covered by the scale of the Amalgamated Association. It must be said, to the credit of the managers of the American Tin Plate Company, that they have not attempted to grind their workmen nor to charge the public exorbitant prices.

Tin plate is higher than when the company came into existence, but no higher than justified by the advance in the price of raw materials.

As to the stock market, the creditable fact has been mentioned in financial reports that although the disagreement over wages was known to the managers of the company days before it became public no attempt was made to take advantage of the situation to manipulate the price of the company's stock. If all the industrial consolidations are managed with as much careful consideration of the various interests involved as this company a great deal of the antagonism to the so called "trusts" would be obliterated.

Dividends on Industrial Stocks.

Recent events have caused much discussion in financial circles of the wisdom or unwisdom of declaring dividends on the stocks of the newly created iron and steel consolidations. These organizations are all earning a great deal of money this year because of the activity in business. Some of them will earn far more than enough to pay the dividends on their preferred stocks, and would have a surplus left after paying a neat dividend on their common stocks. Their stockholders would persumably be pleased mightily to receive such returns on their investments, and are therefore disappointed when so-called dividend periods pass without the desired action by the directors. But the feeling is increasing that it will be well for all such corporations to proceed conservatively this year in the distribution of earnings. It will be better for them and for their stockholders who are investors to accumulate a handsome surplus, so that the dull times which are sure to come in the future may not catch them financially unprepared. The bigger the corporation the greater is the amount of hard cash needed when a pinch comes. It is possible that some companies may have been premature in declaring dividends this year on their preferred stock, to say nothing of the common.

The widely advertised scheme for taking the street railways of Detroit under municipal ownership appears to have been given up by the authorities of that city. Inasmuch as many other municipalities were watching developments in this case with much interest, being the pioneer movement in that direction in the United States, much regret will be felt that it has been abandoned. Cities which would like to enter the same field themselves prefer to have some other town try the experiment first to see how it works. It is a disappointment for them, but very probably a good thing for Detroit that it has been dropped.

OBITUARY.

JEREMIAH A. LONG.

Jeremiah A Long, president of the Falls Rivet & Machinery Company, Akron, Ohio, died suddenly of heart disease on June 28 at his home in that city, in his sixty-third year. He was born in Albany, N. Y., and went to Akron when 14 years of age. From 1864 to 1869 he was employed as bookkeeper for Aultman, Miller & Co. In 1869 he was appointed secretary and treasurer of the Akron Iron Company, which for many years did an extensive business. At the time of his death he was president of the Falls Rivet & Machinery Copmany. He had been associated with this company for many years as vice-president. About three years ago Mr. Long was appointed receiver of the company. At the time of the reorganization a year ago he was made president and through his able management this enterprise has become one of the most successful in the country. He was one of the pioneers of Akron and did much to build up the city and advance its position as an industrial center.

JAMES C. LEWIS.

James C Lewis, formerly prominent as an iron manufacturer in the Pittsburgh district, died on June 24 at his home in Ben Avon, Pa., aged 78 years. Mr. Lewis was formerly a member of the firm of Lewis, Bailey & Dalzell, who operated the iron mills at Sharpsburg, Pa., and subsequently disposed of the property to Moorhead Brothers.

H. L. HEBEBRAND.

H. L. Hebebrand, for many years manager of the Erie City Iron Works, Erie, Pa., died on June 14 at Cleveland, Ohio.

EDWARD P. HAFF.

Edward P. Haff, late of Edward P. Haff & Co., 111 Duane street, New York, died of paralysis June 30 and was buried from his home in Montclair, N. J., July 3. Mr. Haff was first stricken two years ago, the stroke necessitating his retirement from business last year. He was a partner in the well-known houses of Cary, Howard & Sanger and their successors, Howard, Sanger & Co., dealers in notions, cutlery and numerous kinds of metal and other novelties, his department of the business being concerned with the selling of goods. Twelve or 15 years ago, when Howard, Sanger & Co. went out of business, Mr. Haff started a house in his own name in the same general line of goods. He was well known in the hardware trade and very popular, being of a magnetic temperament and always genial and cordial.

PERSONAL.

Wiltsie F. Wolfe is to have charge of the exhibits of heating and ventilating apparatus at the Paris Exposition, under appointment of M. H. Hulbert, director of the department of varied industries.

Joseph Bailey, formerly assistant superintendent of the Chesapeake Nail & Plate Mill, Harrisburg, Pa., has been elected treasurer of the Pine Iron Works Company, Glendale, Pa. The company's plant will be remodeled before being placed in operation.

Wm. C. Coffin, for the past five years manager of the New York office for the Riter-Conley Mfg. Company, Pittsburgh, has gone to the home office as vice-president of the company. His successor in the New York office is S. W. Bowles, late of the Boston office of the Berlin Bridge Company.

Among the recent arrivals in this country is Nicolas de Danilewski of St. Petersburg, Russia, who was formerly general manager of the Poutiloff works, and is now with the International Bank of St. Petersburg, and is a director of the Hartmann Works at Lougansk.

L. F. Brown, superintendent of the Upper and Lower Union Mills of the Carnegie Steel Company, at Pittsburgh, has returned from Europe.

Wm. J. Vance, for a long time in the shipping and purchasing departments of the Edgar Thomson Steel Works, at Bessemer, Pa., has resigned to become secretary of the Monongahela Light & Power Company. He has been succeeded by W. Leslie Miller, his former chief clerk at Bessemer.

John M. Callen has resigned the positions of secretary of the Pottsville Iron & Steel Company and secretary and treasurer of the Pottsville Bridge Company, Pottsville, Pa., in order to accept a responsible position with the Reading Iron Company, Reading, Pa.

Chas. R. Blake, president of the Sligo Iron Store Company, St. Louis, has departed on a Northern trip which is in the nature of a summer outing.

Gauis Paddock, president of the Paddock-Hawley Iron Company, St. Louis, has taken his family to Clayton, N. Y., and after a few days' stay they will return home via the iron and steel centers.

We are indebted to Oglebay, Norton & Co. of Cleveland and Philadelpaia for a large map showing the location of the Lake Superior iron ore ranges and their relation to the principal shipping ports. The map is on the scale of 1 inch to 8 miles.

The employees of the puddling department of the Pennsylvania Bolt & Nut Company at Lebanon, Pa., have received another advance in wages of 25 cents per ton, to take effect July 10. This makes the rate $3.75 per ton and is the fifth increase since April 1. The same percentage will also affect the rolling mill employees.

MANUFACTURING.

Iron and Steel.

The new plant of the Union Steel Casting Company, at Pittsburgh, is about completed and will likely be started this week. The plant has modern equipment and contains a 15-ton acid open hearth furnace. A general line of castings will be made from the smaller sizes up to 15 tons.

It was the intention of the Brown-Bonnell Iron Company, at Youngstown, Ohio, to remodel and enlarge their Phœnix Furnace, at Youngstown. About the time work was to be commenced the company were taken over by the Republic Iron & Steel Company, and they now announce that the proposed improvements to the furnace have been postponed.

Charlotte Furnace, at Scottdale, Pa., operated under lease by Corrigan, McKinney & Co. of Cleveland, Ohio, will be considerably enlarged and extensive improvements made. The five-year lease held by Corrigan, McKinney & Co. expires May 1, 1900, but was recently renewed for five years longer. The improvements will consist of two new stoves much larger than the present ones, a new steel hoist and a hoisting engine, a new cast house and other equipment

Juniata Furnace of the Juniata Furnace & Foundry Company, at Newport, Perry County, Pa., will be started up about July 15, after an idleness of about three years.

Last week the Carnegie Steel Company, Limited, commenced laying the foundations for the new car axle plant to be erected at West Homestead, Pa. For the past four weeks great excavations have been in progress, during which time a tract of land covering 8 acres was excavated to a depth of 7 feet, one of the greatest contracts for excavating ever completed in the Pittsburgh district. Special machinery was used for the work. The dirt was used as filling for a large depression west of the plant.

At Pittsburgh an order was made last week in the United States Circuit Court confirming the second and final account of the receiver of the Pittsburgh Iron & Steel Company. It shows a balance of $130,246 on hand, against which there are claims aggregating $38,313.

The two blast furnaces at Sharon owned by the Sharon Iron Company, Limited, Sharon, Pa., were taken over by the National Steel Company.

On June 26 the Bethlehem Steel Company formally took over the property, &c., of the Bethlehem Iron Company, which latter company have leased their works, &c., to the former company. The officers of the Bethlehem Steel Company are: Robert P. Linderman, president; Edward M. McIlvain, vice-president; Abraham S. Schropp, secretary; C. O. Brunner, treasurer; R. W. Davenport, general superintendent; Owen F. Leibert, chief engineer; Chas. P. Coleman, purchasing agent.

It is expected that the Juniata Furnace of the Juniata Furnace Company, Newport. Pa., will go in blast some time in the latter part of this month.

The Belfont Iron Works, Ironton, Ohio, expect to blow in the Belfont Furnace by July 10.

The Franklin Iron Company of Franklin Furnace, N. J., expect to blow in about July 15.

Niagara Furnace A of the Tonawanda Iron & Steel Company, North Tonawanda, N. Y., was blown in June 28.

Bloom furnace of the Clare Iron Company, Bloom Switch, Ohio, which was blown out June 10, is to be blown in the current week.

The South Chicago Furnace Company expect to blow in their Calumet Furnace the current week.

The Coleman-Shields Company of Niles, Ohio, have purchased the Wheatland Rolling Mill, at Wheatland, Pa. They will operate it, manufacturing muck iron and skelp iron for the market, and hope to start the plant Monday, July 17. The mill has 30 puddling furnaces and a skelp mill for rolling grooved steel up to 22¼ inches wide.

The statement that the La Belle Iron Works, Wheeling, W. Va., contemplated selling part of their plant at Wheeling and removing the balance to Steubenville, Ohio, is untrue. Some extensive improvements are under consideration by this firm, but no definite decision has yet been reached. It will be remembered that the La Belle Iron Works are operating skelp mills at the Jefferson Iron Works, at Steubenville, which probably gave rise to the report that they would remove their whole plant to Steubenville.

Deeds have been filed in the County Recorder's office at Terre Haute, Ind., conveying to the Republic Iron & Steel Company the plants of the Wabash Iron Company and Terre Haute Iron & Steel Company.

It is expected that furnace No. 1 at Lorain, Ohio, will be blown in the current week and No. 2 about two weeks later.

Machinery.

The Thew Automatic Shovel Company will establish a plant at Lorain, Ohio. It is proposed to erect a structural steel building, 75 x 200 feet, with boiler house and forge shop, 84 x 24 feet, both buildings to have slate roofs and brick side walls. The power equipment will comprise a 25-ton electric traveling crane and 75-kilowatt generator, 125 to 150 horse-power automatic cut off engine and return tubular boiler. The machine shop will contain a 10-foot extension boring mill and horizontal boring mill, lathes, planers, shaper, drill, pressers and milling machine. The plant is designed for the manufacture of the Thew automatic steam shovel and other specialties. The organization of the company is not yet completed.

Boyts, Porter & Co., Connellsville, Pa., makers of the Yough steam pump, have made sales of one 26 x 14 x 48 inch double plunger mine pump to the Standard mines of the H. C. Frick Coke Company; one 30 x 12 x 36 inch mine pump for the Lemont mines and one vertical deep well pump for the Youngstown mines of the same company; one mine pump for the Davis Coal & Coke Company, Coketon, W Va.; one heavy pressure pump for the Virginia Coal & Iron Company, Stonega, Va.; three mine pumps for the Berwind-White Coal Mining Company, Windber, Pa.; one mine pump for the Henrietta Coal Mining Company, Dunlo, Pa., and two special double plunger boiler feed pumps for the Lukens Iron & Steel Company, Coatesville, Pa. The works of the firm are running to their fullest capacity.

William Tod & Co., engineers, founders and machinists, Youngstown, Ohio, are operating their works to full capacity and are full of work. For the Youngstown works of the National Steel Company, at Youngstown, Ohio, they are building three pairs vertical cross compound steeple type blowing engines, steam cylinders 54 x 102, air cylinders 108, stroke 5 feet; for the American Steel Hoop Company three pairs disconnected compound blowing engines, with steam cylinders 40 x 78 inches, air cylinders 84 inches, stroke 5 feet; for the Ohio Iron & Steel Company, Lowellville, Ohio, one Standard blowing engine, 42-inch steam cylinders, 84-inch air cylinders, 60-inch stroke; for the Youngstown Steel Company, Youngstown, Ohio, one low pressure blowing engine, steam cylinders 80 inches, air cylinders 84 inches, 60-inch stroke. They also have orders for three pairs of reversing blooming mill engines, with cylinders 46 inches diameter, 60-inch stroke. These engines are of the return crank construction and have hollow piston rods, carrying the pistons free from the cylinders. One pair of these engines are for the American Steel & Wire Company and two pairs for the Diamond State Steel Company, Wilmington, Del. For the Lukens Iron & Steel Company, Coatesville, Pa., one tandem compound engine, with cylinders 34 x 60 inches by 60-inch stroke. They have a large amount of smaller work, but these are the principal orders ahead for heavy work. They are now putting up an addition to their erecting shop, 85 x 102 feet, and are installing two new three-motor electric cranes.

The Stilwell-Bierce & Smith-Vaile Company, Dayton, Ohio, have recently sold feed water heaters and purifiers as follows: One 300 horse-power for the Keeling Coal Company, one 200 for the Listie Mining & Mfg. Company, one 1800 for E. P. Allis & Co., to be installed in the Pittsburgh Water Works; one 125 for the Aschman Steel Casting Company, two 200 for the American Water Works & Guarantee Company, one 250 for the Miller's Run Mining Company, one 400 for the Ohio & Pennsylvania Coal Company, one 800 for the New York Furnace, one 200 for the Frick Company, one 250 for the Citizens' Electric Light & Power Company, one 200 for the Homestead Ice & Storage Company, one 800 for the Mesta Machine Company and one 1000 for the Ellwood Tube Mills. The cast iron heater built by this company is meeting with much success.

Westinghouse, Church, Kerr & Co. report having entered very large export orders for steam and gas engines to be built by the Westinghouse Machine Company, East Pittsburgh. During the past month contracts have been secured more freely than at any previous time. The following details show how wide a market is now opened for first-class American machinery: England has sent orders for 16 steam engines of the Westinghouse compound and standard types, aggregating 1200 horse-power. To France, six Westinghouse engines will be shipped, aggregating 600 horse-power. Russia takes three standard and compound Westinghouse steam engines and two Westinghouse gas engines of 90 horse-power each, the total being 550 horse-power. Holland has contracted for eight Westing house engines, making together 350 horse-power. The Argentine Republic takes 11 Westinghouse steam engines, aggregating 400 horse-power. Australia and New Zealand order 12 compound and standard Westinghouse steam engines and two Westinghouse gas engines, the total horse-power being 600. Chili has bought four Westinghouse steam engines, aggregating 300 horse-power. Sweden orders four engines, Cuba two engines, South Africa four engines, Mexico one engine, Germany five engines, Patagonia, Austria, Belgium, Canada and Egypt each order one Westinghouse steam engine. The total orders for export booked by Westinghouse, Church, Kerr & Co. during the past month for Westinghouse engines are 85, with an aggregate of upward of 6000 horse-power. To meet this increasing foreign business the extension, doubling the comparatively new works of the Westinghouse Machine Company at East Pittsburgh, is being rapidly pushed forward.

The Union Brewing Company, a new company in St. Louis, are being equipped with a 50-ton St. Louis ball ice machine, 40 horse-power Erie engine and two 66 inches by 16 feet tubular boilers, made by the John O'Brien Boiler Works Company, St. Louis.

Owing to the increase of business in the Southern States the Dodge Mfg. Company have opened in Atlanta, Ga., a branch office, with W. L. Draper in charge. This office is in a position to figure on complete outfits of shafting, pulleys, hangers and rope transmission, as well as to give advice on engineering problems.

The Canton Roll & Machine Company of Leechburg, Pa., have been incorporated with a capital of $100,000. The directors are J. E. Carnaham, Leechburg, Pa.; W. J. Steel, New Castle, Pa.; H. L. Smith, Smithfield, W. Va., and A. J. Steele, North Baltimore, Ohio. The new concern propose to do a general foundry business and will manufacture rolls and castings.

The Pittsburgh Foundry & Steel Company have made application for a charter and will take over and operate the plant of the Carlin Mfg. Company on Preble avenue, Allegheny, Pa. The plant was partially destroyed by fire some time since, but will be improved and enlarged. The incorporators are David Carlin, Wm. E. Lee, Watson D. Adair, C. C. Henry and R. Solomon.

The H. K. Porter Company, Incorporated, of Pittsburgh, builders of light locomotives, have received orders recently for four locomotives for Russia; also an order for an engine with 8-inch cylinders from the Cooks Inlet coal fields of Cooks Inlet, Alaska; also an order for a 7-inch cylinder locomotive for a Japanese railway. The concern shipped a few days ago an 8-inch cylinder locomotive to Auckland, New Zealand. They also have orders for a large number of light locomotives for delivery in this country.

H. W. Caldwell & Son Company, manufacturers of elevating and conveying machinery, Chicago, have arranged for the construction of a large plant at Seventeenth street and Western avenue, where they have purchased a tract of about 2½ acres. The cost of the plant is estimated at $150,000, and it is to be completed and ready for occupancy by January 1. The buildings will be of the highest type of construction and will be equipped with the most modern machinery. There will be a machine shop 100 x 180 feet, another structure of the same dimensions devoted to the sheet metal department, a central power station 56 x 73 feet, and later a perforating and wood working and others buildings, occupying all the available space. The company have been in the business for 25 years and located in Chicago for 20 years. The plant is well situated so far as shipping facilities are concerned, the Belt Line and the Chicago & Northwestern and the Panhandle tracks lying immediately west, with switch tracks penetrating the yards.

The American Steel Casting Company, St. Louis, are pushing hard at new additions to their already extensive plant at Granite City, Ill. A new boiler house of 75 x 75 and engine house of 60 x 100, all of iron, are being erected. An 800 horsepower Stirling boiler with automatic stokers has been installed, and the new steam generating plant will be provided with an iron stack 8 feet 4 inches diameter by 150 feet high. This concern is now running double turn and employs in the neighborhood of 1600 men.

The Fette Engine Company, Indianapolis, Ind., have been incorporated with a capital stock of $20,000. The directors are John H. Murphy, Peter Kretzer, Frank J. Fette and Albert N. Kretzer.

The Harrisburg Foundry & Machine Works of Harrisburg, Pa., have been working night and day for the past ten months, and have refused, owing to the crowded condition of their establishment, many otherwise attractive contracts. They are at present having work done in four separate establishments to keep up with the contracts on hand, while their present output is three times greater than it was in 1897.

The Kennedy Perfect Oiler Company of Carbondale, Pa., have been organized for the manufacture of machinery and mechanical appliances. The capital stock is $135,000 and the directors are John J. Kennedy, P. A. Correll, M. F. Morton, John B. Shannon, John F. Reynolds, John S. Roche and Frank P. Reynolds.

The Bradford Lathe Company, Cincinnati, Ohio, report that the demand for the Bradford lathe still continues to be heavy. Several cable orders for shipment abroad have just been received in addition to the large number already entered upon their books. To facilitate the production of the lathes they are at present being brought out in lots of 60 at a time, or about two complete lathes daily.

The Bickford Drill & Tool Company, Cincinnati, Ohio, report a largely increased business in their line over the same period last year. They have under way in course of construction 350 radial drills at the present time and are turning out completed ready for delivery one radial every day. When it is considered that the average cost per tool approximates something over $500, the magnitude of the business done can readily be perceived. The company have practically abandoned the production of all other tools formerly made and are devoting their plant to the production of radials exclusively.

The Kilbourne & Jacobs Mfg. Company of Columbus, Ohio, have just completed two new additions to their plant, both being brick, slate roof buildings. One is an addition 60 x 100 feet to the truck shop, the other an addition 75 x 100 feet to the blacksmith shop. They have also just purchased 4 acres of ground between their shops and Fourth street, which they intend to utilize a little later for additional buildings. The additional machinery which is to be put in the additions has all been ordered. The firm have never known orders to be so heavy, especially for this season of the year.

Hardware.

J. C. Griffin, formerly superintendent of the manufacturing department of the Lindsay & McCutcheon Company, Allegheny, Pa., has organized a company to be known as the Griffin Mfg. Company. They have secured buildings corner of Chartiers and Fayette streets, Allegheny, and will manufacture a general line of builders' hardware, and in addition will make tools and dies and manufacture specialties in hardware line on contract for others.

The Fair Haven Wire Works, Fair Haven, Vt., have just been succeeded by the Kilbourne Mfg. Company, a new corporation, organized with a capital of $20,000. The plant established in Fair Haven in 1896 was purchased for the new concern by Chas. E. Kilbourne, late manager of the Fair Haven Wire Works, and several others. Mr. Kilbourne will act as treasurer and general manager of the new corporation, who have ordered considerable new machinery, the intention being to materially increase the output of bright wire goods and add new lines of manufacture.

Miscellaneous.

The Whiting Foundry Equipment Company have lately received an order from the McCormick Harvesting Machine Company for four additional No. 9 cupolas, each having a capacity of 18 tons per hour. These are in addition to two similar cupolas installed some months ago. This forms the largest melting plant of any foundry in the country. Besides, this company have lately furnished the Pennsylvania Railroad Company with one of their No. 10 cupolas for the Altoona shops and will soon make shipment of a No. 5 cupola to the Westinghouse Brake Company, St. Petersburg, Russia. The Whiting Company report more cupolas being furnished now than at any time in their history.

The plant of the Sharon Clay Mfg. Company, at Sharon, Pa., which has been idle for about three years, will be put in operation as soon as the necessary repairs can be made, probably in three weeks. The plant employs about 60 men.

The Stewart Iron Works of Cincinnati, Ohio, have just been awarded the contract for the iron and steel work for the new penitentiary to be erected at Syracuse, N. Y. Among other things, the contract includes over 400 of the most modern steel cells, equipped with the Stewart locking and operating devices. The penitentiary will cost more than $250,000, half of which is represented by the contract for the iron and steel work. The Stewart Company will in the near future erect a large addition to their already extensive plant.

Record Breaking in Iron Sales.—About a year since we published a statement showing that Rogers, Brown & Co. of New York and Cincinnati had sold slightly less than 500,000 tons of pig iron for a period of six months, from January to June inclusive. That tonnage was considered a record breaker. The firm have not been content to rest on their laurels, and now report that for the first half of 1899 their sales of pig iron were 716,000 gross tons, an increase of 44 per cent. over last year. Since it is estimated that the increase in the production of foundry iron has not been more than 10 per cent. it appears that Rogers, Brown & Co. are steadily enlarging their connections with the producers and consumers of foundry and forge irons. Shipments are made each month from 50 to 60 different furnaces.

The use of penny-in-the-slot gas meters is growing rapidly in England. It is stated that one London gas company recently had no fewer than 72,288 automatic meters in use. So extended has their employment become that there has been a noticeable dearth of copper coins in some localities owing to the large number locked up in these appliances.

The Eiffel Tower in Paris is undergoing a complete renovation in preparation for next year's exposition. It has been decided to paint the entire structure with an enamel paint in five shades. The dome and summit are to be of a light lemon chrome, and the shades will graduate to the pedestal, which will be a rich, dark orange. For the two coats which are to be applied upon the tower nearly 50 tons of enamel paint will be employed.

A reciprocity treaty relating to the British colony of Bermuda has been concluded at Washington. It will be submitted by the commissioner from that island to the Bermuda Legislature before being finally signed.

The British steamer "Anniston" arrived at Philadelphia on June 27 with 4381 tons of iron ore from Daiquiri, Cuba.

The Iron and Metal Trades.

A Comparison of Prices

At date, one week, one month and one year previous.

Advances Over the Previous Month in Heavy Type. Declines in Italics.

	July 5, 1899.	June 28, 1899.	June 7, 1899.	July 6, 1898.
PIG IRON:				
Foundry Pig, No. 2, Standard, Philadelphia	**$18.50**	$18.50	$16.50	$10.00
Foundry Pig, No. 2, Southern, Cincinnati	**17.00**	17.00	15.50	9.00
Foundry Pig, No. 2, Local, Chicago	**18.50**	18.50	16.50	11.00
Bessemer Pig, Pittsburgh	**20.35**	19.75	18.00	10.25
Gray Forge, Pittsburgh	**17.00**	17.75	16.25	9.00
Lake Superior Charcoal, Chicago	**21.50**	21.00	18.00	11.50
BILLETS, RAILS, ETC.:				
Steel Billets, Pittsburgh	**32 50**	31.50	30.00	14.50
Steel Billets, Philadelphia	**34.00**	34.00	31.00	16.50
Steel Billets, Chicago	.....	.....	32.00	16.25
Wire Rods, Pittsburgh	40.50	.....	.....	19.50
Steel Rails, Heavy, Eastern Mill	**28.00**	28.00	26.00	17.00
Spikes, Tidewater	**1.85**	1.85	1.75	1.40
Splice Bars, Tidewater	**1.75**	1.75	1.65	1.05
OLD MATERIAL:				
O. Steel Rails, Chicago	**15.00**	14.50	12.00	8 25
O. Steel Rails, Philadelphia	.....	15.50	14.50	10.00
O. Iron Rails, Chicago	**18.50**	18.00	18.00	12.50
O. Iron Rails, Philadelphia	.....	19.50	18.00	12.00
O. Car Wheels, Chicago	**16.00**	16.00	15.50	11.50
O. Car Wheels, Philadelphia	....	16.00	15.50	10.00
Heavy Steel Scrap, Chicago	**15.00**	14.00	11.00	8.00
FINISHED IRON AND STEEL:				
Refined Iron Bars Philadelphia	**2.00**	2.00	1.65	1.00
Common Iron Bars, Youngstown	1.80	1.80	1.80	0.90
Steel Bars, Tidewater	**2.05**	2.05	1.90	1.05
Steel Bars, Pittsburgh	2.00	2.00	2.00	0.90
Tank Plates, Tidewater	2.50	2.50	2.50	1.20
Tank Plates, Pittsburgh	**2.40**	2.35	2.35	1.10
Beams, Tidewater	1.90	1.90	1.90	1.30
Beams, Pittsburgh	1.75	1.75	1.75	1.15
Angles, Tidewater	*1.85*	1.85	1.90	1.20
Angles, Pittsburgh	1.75	1.75	1.75	1.05
Skelp, Grooved Iron, Pittsburgh	**2.15**	2.15	2.05	1.05
Skelp, Sheared Iron, Pittsburgh	**2.35**	2.25	2.20	1.07½
Sheets, No. 27, Chicago	**3.05**	3.05	3.00	1.95
Sheets, No. 27, Pittsburgh	2.85	2.85	2.85	1.85
Barb Wire, f.o.b. Pittsburgh	2.95	2.95	2.95	1.70
Wire Nails, f.o.b. Pittsburgh	2.35	2.35	2.35	1.30
Cut Nails, Mill	2-05	2.05	2.05	1.05
METALS:				
Copper, New York	*18.25*	18.00	18.50	11.75
Spelter, St. Louis	*5.70*	5.50	6.45	4.60
Lead, New York	**4.50**	4.45	4.45	4.02½
Lead, St. Louis	**4.35**	4.35	4.30	3.90
Tin, New York	**27.37½**	26.15	25.40	15.75
Antimony, Hallett, New York	10.00	10.00	10.00	9.00
Nickel, New York	38.00	38.00	38.00	34.00
Tin Plate, Domestic, Bessemer, 100 lbs., New York	4.05	4.05	4.05	2.85

Chicago.

Office of *The Iron Age*, 805 Fisher Building, CHICAGO, July 3, 1899.

Continued strength is the leading feature of the local market. Further advances have been made in some lines, and wherever a supply is still available an active trade is reported. Greater scarcity than ever is developing in some lines, more particularly in Steel Billets.

Pig Iron.—An active demand is noted for small lots, but few inquiries are now coming up for large quantities. Two or three good contracts for Southern Iron have been closed. It is believed that most of the heavy consumers in this territory have made arrangements for their requirements during the next six to nine months, and therefore additional business is only expected from the smaller buyers, or from those who find their trade exceeding expectations and compelling the purchase of further material. It has happened recently that accidents at furnaces have interfered with shipments and thrown consumers into the market who had supposed themselves well covered. Some of the heavy business of the past month has been due to causes of this character. Our quotations of local Iron in the last issue were a trifle too high, and have been changed to conform with actual sales. We quote for cash as follows:

Lake Superior Charcoal	$21.50	to	$23.00
Local Coke Foundry, No. 1	19.00	to	19.50
Local Coke Foundry, No. 2	18.50	to	19.00
Local Coke Foundry, No. 3	18.00	to	18.50
Local Scotch, No. 1	20.00	to	20.50
Ohio Strong Softeners, No. 1	20.80	to	21.50
Southern Coke, No. 1	19.65	to	20.00
Southern Coke, No. 2	18.65	to	19.15
Southern Coke, No. 3	18.15	to	18.65
Southern Coke, No. 1 Soft	19.65	to	20.00
Southern Coke, No. 2 Soft	18.65	to	19.15
Foundry Forge	17.65	to	18.15
Gray Forge and Mottled	17.65	to	18.15
Southern Charcoal Softeners	19.00	to	20.00
Alabama and Georgia Car Wheel	20.50	to	21.50
Malleable Bessemer	21.00	to	22.00
Standard Bessemer	21.00	to	22.00
Jackson County and Kentucky Silvery, according to Silicon	....	to	24.00

Bars.—The demand for Bars shows no abatement. Mills are steadily booking orders in excess of their output. The demand is coming from all classes of buyers, including implement manufacturers. The latter are only purchasing a portion of what they will need, but if they were placing as heavy contracts as usual the mills would speedily be sold up, and they are even now falling far in arrears on deliveries, with possibly an exception in the case of some of the Steel manufacturers, who are making reasonably prompt shipments. Bar Iron prices are $1 higher, mill shipments being now quoted at 1.85c. to 1.95c., Chicago, on Common Iron. Soft Steel Bars are still quoted at 2c. to 2.15c., and Hoops at 2.35c., base, for Bands. Jobbers report a continued active demand, and have advanced their prices, now quoting small lots from stock at 2.15c. for Bar Iron, 2.10c. for Soft Steel Bars, 3.25c. for large lots of Norway and Swedish Iron, and 3.50c. for small lots.

Structural Material.—Considerable work is in sight, but not much has been placed during the week, except the usual run of small lots. About the most important contract was a building taking 600 tons. Mill shipments are quoted as follows, Chicago delivery: Beams, Channels and Zees, 15 inches and under, 1.90c.; 18 inches and over, 2c.; Angles, 3 to 6 inches, 1.90c.; over 6 inches and under 3 inches, 2c.; Tees, 1.95c.; Universal Plates, 2.65c. Store prices are from ¼c. to ½c. above these rates.

Merchant Pipe.—New business is quiet for mill shipments, but jobbers find a heavy demand from their customers, and stocks are badly broken, the mills being far in arrears on deliveries. Mill shipments are held at 50 and two 10's. Merchant Steel Boiler Tubes are now quoted in small lots, 1¼ to 1¾ inches, inclusive, 40 per cent. off; 2 to 2¾ inches, inclusive, 50 per cent. off; 3 inches and larger, 55 per cent. off.

Plates.—Local manufacturers report a stream of inquiries from all parts of the country from ocean to ocean, but are unable to take any of the business now being offered. Jobbers are enjoying consequently a good demand from stock and are quoting Tank Steel at 3c. upward and Flange at 3.25c. upward. A few Eastern mills are quoting for late summer delivery at 2.80c., Chicago, for Tank Steel, 2.90c. for Flange, 3c. for Marine and 3½c. to 5½c. for Fire Box.

Cast Iron Pipe.—Numerous orders are received from all sections of the country, but no large contracts have recently been placed. The aggregate demand is better than at the corresponding time in previous years, notwithstanding the advanced prices now ruling.

Sheets.—The mills are short of material, and manufacturers report that it is difficult to get it at any price, hence slow deliveries are being made even on old contracts. A good inquiry is being received for fall delivery, and some sales have been made both of Black and Galvanized Sheets. Mill shipments of No. 27 Black are quoted at 3.05c. to 3.15c., Chicago, and Galvanized Sheets at 70 and 10 to 70 and 5 per cent. off, with usual freight allowance. Jobbers on the Mississippi River have at last raised their prices to a parity with those of Chicago jobbers. Chicago jobbers quote small lots of No. 27 Black at 3c. to 3.15c., Wood's Smooth 3.35c. and Galvanized at 70 per cent. off.

Merchant Steel.—The manufacturers of implements now buying are placing orders for their full requirements, except the plow makers. The general demand is not specially active, but the mills are still crowded with work, and are not catching up on deliveries. Mill shipments, Chicago delivery, are quoted as follows: Smooth Finished Machinery Steel, 2.70c. to 2.80c.; Smooth Finished Tire, 2.45c. to 2.55c.; Open Hearth Spring Steel, 3.20c. to 3.30c., base; Toe Calk, 2.95c. to 3.15c., base; Ordinary Tool Steel, 6½c. to 7½c.; Specials, 13c. and upward. Jobbers have also materially advanced their prices for small lots from stock.

Billets and Rods.—Sales of small lots of Open Hearth Billets have been made at $38, September delivery. Consumers have attempted without success to purchase Open Hearth Billets at Pittsburgh for delivery during the next 60 days. No sales of Bessemer Billets have been made, the local mills now consuming all their production in their finishing departments. The Illinois Steel Company have made arrangements by which some of their export business in Wire Rods will be supplied from other sources, making available part of their current product for local consumption. Small sales have been made in consequence of this arrangement at $42.

Rails and Track Supplies.—Plenty of inquiries for Standard Sections are being received for deliveries running up to December, but no sales of importance have transpired. Quotations are continued at $29 to $30. Small lots of Light Rails are in demand, but the local mills are well sold up on these, and can only promise delivery in September. Quotations run from $30 upward, according to weight. Track Supplies are quoted as follows: Fish Plates, 1.60c. to 1.70c.; Spikes, 2.25c. to 2.35c.;

Track Bolts, with Hexagon Nuts, 3.10c. to 3.15c.; Square Nuts 2.90c. to 3c.; Steel Links and Pins, 2.25c. to 2.30c.; Iron Links and Pins, 2c.

Old Material.—Dealers report a fair movement in everything. Some of the railroad companies having headquarters here have made large sales of all classes of Scrap, finding them easily absorbed by the trade. Manufacturing establishments are also readily disposing of their accumulations. A sale has been made of some 4000 tons of Low Phosphorus Steel Scrap at $20 gross ton at maker's works. Dealers' selling quotations are as follows, per gross ton: Old Iron Rails, $18.50; Old Steel Rails, mixed lengths, $15; Old Steel Rails, long lengths, $15.50; Relaying Rails, $19 to $20; Old Car Wheels, $16; Heavy Melting Scrap, $15; Mixed Steel, $11. The following selling prices are per net ton: No. 1 Railroad Wrought, $16 to $16.50; Dealers' Forge, $11.50 to $12.50; Fish Plates, $17 to $17.50; No. 1 Mill, $8.50 to $9; Heavy Cast, $12 to $12.50; Stove Plates, $8 to $8.25; Iron Car Axles, $20; Horseshoes, $12 to $12.50; Cast Borings, $6.50; Steel Axle Turnings, $8.25; Iron Axle Turnings, $8.75; Machine Shop Turnings, $8 to $8.50.

Metals.—Copper has been reduced, carload lots of Lake being now quoted at 18c., while Western can be had at 17.50c. Spelter is lower at 5.62½c., but Pig Lead is firmly maintained at 4.42½c. It is quite confidently expected that the labor troubles at the Lead smelting works in Colorado will be settled by the middle of this month, and that operations will then be resumed. Outside offerings are extremely light, while the demand from consumers is fair.

Tin Plate.—The situation is interesting to both manufacturing consumers and jobbers, now that the Tin Plate factories have been closed to await the adjustment of the wages schedule. Deliveries were backward, even when the factories were running, and spot stocks will not last any great length of time. An active demand is experienced by jobbers, who may speedily be obliged to advance their prices to protect themselves.

The offices of the Union works of the American Steel Hoop Company have been removed from The Rookery to the Marquette Building, Chicago.

Philadelphia.

Office of *The Iron Age*, Forrest Building,
PHILADELPHIA, PA., July 3, 1899.

The first half of 1899 will pass into history as one of the most remarkable periods ever known in the Iron and Steel trades. Not only has the volume of business been larger but prices have shown a greater advance and greater strength than at any former time. Every advance has been maintained without a single relapse, and although prices are from 70 to 100 per cent. higher than they were six months ago the tendency at this time is not to look for lower prices, but the question is how much higher are they going, and how long is the advancing tendency to be maintained. These are hard questios to answer, not because there are any signs of reaction, but the advance has been so great and the volume of business so enormous that even pronounced optimists may well hesitate in regard to further sanguine predictions. It may be conservatively stated, however, that the chances of a decline appear to be very small. Stocks are so light, the productive capacity so fully employed, and the demand during the next few months so amply assured, that there is hardly a chance for a reaction, and even if there should be it would be so easy that nobody would suffer much injury. The markets of the world are all bare of material, and if necessary quite a large tonnage could be distributed abroad without any serious sacrifice in prices. Taking everything into account, therefore, it is reasonable to suppose that the last half of 1899 will be the best that has ever been known in the Iron trade in the United States. The first half of the year required the fulfillment of contracts at low prices, the last half will be at prices more in proportion with current quotations.

Pig Iron.—The market during the week has not been specially active, but considering the holidays business has been as active as ought to be expected. Prices have been very firm, and at the close of the month averaged higher figures than any yet quoted. There is a wide divergence in ideas as to what the market really is. Those that have no Iron for sale are particularly emphatic that $18.50 is a full price for No. 2 X Foundry, but when it comes to actual business buyers are fortunate if they can get anything at $18.75 to $19, while $19.25 and $19.50 are not at all unusual figures. Prices of other grades of Iron are similarly erratic, but $17.25 to $17.50 is about as well as could be done for good Mill Irons, and about $18 to $18.25 for No. 2 Plain. Buyers look forward to the coming month with considerable anxiety. Their requirements are likely to be very large, and they would like to secure material to cover, but prices are high, and urgency to place orders would probably make them still higher, so that in the meanwhile they pick up a little at a time, and keep a sharp lookout for developments in the near future. Sellers are in much the same position, although they have probably more confidence than buyers have. At all events they are not pushing anything. If buyers come along they try to accommodate them conservatively, but they are not encouraging long deliveries, and give the preference to 60 or 90 day contracts. It is probable, however, that heavier trading will be done after the middle of the month, as the outlook cropwise, financially and otherwise will be more settled than it is to-day, not that there is anything unfavorable now, but the outlook for the fall trade will be pretty definitely settled by that time. It may be interesting to note the movement in prices during the period under review, quotations on the first of each month being as follows for Philadelphia or nearby points:

January, No. 2 X Foundry	$11.15	to	$11.25
February, No. 2 X Foundry	11.50	to	12.00
March, No. 2 X Foundry	13.50	to	14.00
April, No. 2 X Foundry	15.75	to	16.25
May, No. 2 X Foundry	15.75	to	16.25
June, No. 2 X Foundry	16.50	to	17.00
July, No. 2 X Foundry	18.75	to	19.25

Billets.—The advance in Steel is probably greater than in any other specialty, being about 100 per cent. during the six months. There has been more or less of a scarcity during the entire period, but this was particularly marked during May and June, and is probably greater to-day than at any time. Prices opened as follows on the first of each month:

January	$17.20
February	19.25
March	24.00
April	28.00
May	28.00
June	30.50
July	34.00

Finished Material.—The half year just closed has been one of the most extraordinary the trade has ever experienced. Full time has been the rule in all departments, and in spite of enlargements of mills and the starting of many that were supposed to be obsolete, it has been found impossible to meet all the demands that has been made on them. A very large amount of material was taken for export, but the home trade has dwarfed everything, so that foreign trade has been almost forgotten. Prices abroad are rapidly approaching a parity with our own, however, and with increasing production in the United States we may again see a revival in the export trade, as it is there whenever we require to use it. Meanwhile, however, there is such a pressure for deliveries on home account, and so much business in prospect, that it is hardly likely that we shall export anything like in proportion with what was done during the last quarter of 1898 and the first quarter of 1899. Prices on the first of each month were as follows:

PLATES.—¼-INCH.

January	1.15c.	to	1.20c.
February	1.45c.	to	1.50c.
March	1.75c.	to	1.80c.
April	2.20c.	to	2.30c.
May	2.20c.	to	2.30c.
June	2.35c.	to	2.40c.
July	2.50c.	to	2.65c.

REFINED BARS.

January	1.15c.	to	1.20c.
February	1.17½c.	to	1.20c.
March	1.25c.	to	1.30c.
April	1.50c.	to	1.55c.
May	1.55c.	to	1.65c.
June	1.60c.	to	1.65c.
July	2.00c.	to	2.10c.

(By Telegraph.)

The market is very strong, and prices are in most cases higher than on Saturday. Muck Bars sold at $40, Philadelphia, and other lots are under negotiation at that figure. There is a heavy demand, and the chances are that higher prices will be general before the end of the week.

Cincinnati. *(By Telegraph.)*

Office of *The Iron Age*, Fifth and Main streets,
CINCINNATI, July 5, 1899.

While June was hardly so prolific in new business as May was, yet on the whole the result is entirely satisfactory in Pig Iron circles. Some few sellers report June to have been an unusually heavy month and no one is complaining except as to difficulty in securing Iron wherewith to satisfy their customers. The past week has brought forth no special feature upon which to comment. There has been a run of trade somewhat lighter perhaps than the average for the past two months, but what might sell would be considered normal under the present conditions. No larger sales than 1500 tons are reported and the larger part of the business has consisted of lots of less than 500 tons. There has been a fair selling to cover first half of next year. The demand for Soft Irons is very strong and the supply especially for prompt

delivery decidedly short. In tone the market is very strong. Prices are just about what they were last week. Authorities differ as to the correct quotation for Forge Irons, and while some claim that the maximum should be $16.25, Cincinnati, yet the majority say $16 is as high as it ought to be quoted. The outlook for the next week is a rather quiet one. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1	$17.50	to	$18.00
Southern Coke, No. 2	17.00	to	17.50
Southern Coke, No. 3	16.25	to	16.50
Southern Coke, No. 1 Soft	17.50	to	18.00
Southern Coke, No. 2 Soft	17.00	to	17.50
Southern Coke, Gray Forge	15.75	to	16.25
Southern Coke, Mottled	15.75	to	16.25
Ohio Silvery, No. 1	22.00	to	23.00
Ohio Silvery, No. 2	20.50	to	21.50
Lake Superior Coke, No. 1	18.75	to	19.50
Lake Superior Coke, No. 2	18.25	to	18.75
Car Wheel and Malleable Irons.			
Standard Southern Car Wheel	$18.00	to	$19.00
Lake Superior Car Wheel and Malleable	21.50	to	22.00

Plates and Bars.—A very active market with material scarce and buyers plentiful. We quote, f.o.b. Cincinnati: Bars, wholesale, 2c. with half extras, 2.15c. with full extras; Bar Angles, 2.30c. for ½-inch and larger; Sheets, No. 10, 2.95c.; No. 27, 3.35c.; Plates, 2.60c. to 2.75c.

Old Materials.—Steady and active, with prices unchanged. We quote, f.o.b. Cincinnati: No. 1 Wrought Iron Railroad Scrap, $16 to $16.50; Cast Scrap, $11 to $12; Axles, $20 to $21; Iron Rails, $19 to $20; Car Wheels, $14.50 to $15.

St. Louis.

Office of *The Iron Age*, 512 Commercial Building, ST. LOUIS, July 3, 1899.

Pig Iron.—A rising market is again seen this week and sales have been made running into next year at prices named below. A large tonnage has been written up for delivery into 1900, and the orders have been placed by buyers who have a reputation of looking carefully into the future. Much has been said in press reports about new furnaces becoming relieving factors in the Iron famine, but those posted in the conditions understand that stacks at present in service will, of necessity, blow out for repairs. The Ore and fuel supply must also be reckoned with, and these are not now as plentiful as furnace companies in active business would like. If no unforeseen calamity arises it is the general opinion that present conditions of supply and demand will continue for the next 12 months and, of course, prices cannot then go down. Speaking from the present outlook 1900 promises to come in on yards as barren of stock as they are to-day. No doubt Pig Iron consumers who are holding off will realize that they are up against hard facts and not looking into a panorama of fancy figures. Foreign buyers are shrewd enough to see the lay of things and are buying at present prices. We quote for cash, f.o.b. St. Louis, as follows:

Southern No. 1 Foundry	$19.25	to	$19.50
Southern No. 2 Foundry	18.25	to	18.50
Southern No. 3 Foundry	17.25	to	17.50
No. 1 Soft	19.25	to	19.50
No. 2 Soft	18.25	to	18.50
Gray Forge	16.75	to	17.00
Mottled	16.25	to	17.00

Bar Iron.—A new ruling now governs Iron cut to lengths, both for ordinary use and tires. Mills add 10c. per 100 lbs. for cutting, and a like charge is naturally made now by jobbers. Stock lots are being sold out of stores at 2.15c, base. It seems to be a general feeling that after present jobbers' orders, placed at the low prices, have been filled future purchases will be made as required. No speculative spirit is in favor, and while it is not expected that the tonnage handled will be less there is no doubt that careful buying will cause no sudden reversal in the market. A conservative and commendable move is also found in the contraction of time allowed on invoices. Thirty days net cash is named, and this will tend to confine purchases to actual requirements. The safe cash principle is being more nearly approached by these actions. Mill shipments are nominally 1.85c. to 1.90c., base, East St. Louis.

Rail and Track Supplies.—The ruling prices cause buying on actual needs only. Sundry supplies are in good demand in all lines of car departments. We quote as follows: Splice Bars, 2c.; Track Bolts, with Square Nuts, 3c.; with Hexagon Nuts, 3.15c.; Spikes, 2.25c. to 2.50c.; Iron and Steel Links and Pins, 2.20c.

Pig Lead.—No change in the situation and quotations are in the vicinity of 4.35c. to 4.37½c. Lead Ore was sold at $26 per 1000 lbs., and at price which prevailed last week.

Spelter.—Sales have been made at 5.70c., and a much firmer feeling obtains. Ore is moving at higher prices, and $44 was paid as a top figure. Monday as well as Tuesday was treated as a holiday, and but little active business was transacted.

Birmingham.

BIRMINGHAM, ALA., July 3, 1899.

The market for Iron has shown no weakness in price. The demand, considering the season, keeps up well, but is not so active as it has been. It is pretty well understood by the trade that anything like prompt delivery is extremely difficult, and the buyers have found out that emergency pleas do not always secure Iron. One sale of 2000 tons of Gray Forge was made at $13, while some have been made at higher values, though in smaller lots. No. 2 is generally held at $15 or more, and when one can make desired delivery there is no trouble in getting the price. For close deliveries the sales are only moderate, owing to scarcity of Iron. For long deliveries the demand has lessened. The Pipe companies have been buyers to a moderate extent, and their demands have not been fully satisfied. Shipments have been good and everything is being moved as fast as shippers can load. Shipment from Warrant yards continues free.

The decrease in stock for June has not yet been reported. The formal transfer to the Tennessee Coal, Iron & Railroad Company of the Sheffield Furnace property lately acquired by them has been made and the purchase price, $850,000, paid over. That chapter is therefore closed. The property will be managed by the general office here, and the output will be sold through the sales agents of the Tennessee Coal, Iron & Railroad Company, as is the case with their other furnaces, the price being made by the general office here. The commanding position this successful deal gives to the Tennessee Company is so obvious as to need no comment. It makes the company kings in the trade and no competition can wrest from their grasp the scepter of prices.

The Sloss Company have followed the example set by the Tennessee Company, and they, too, have become expansionists and absorbed the Philadelphia Furnace at Florence, Ala., and the Lady Ensley Furnace at Sheffield, with more than a possibility of including the Hattie Ensley Furnace, also at Sheffield. There are some complications connected with the latter, in which some English bondholders figure. This new addition to the Sloss Company Furnace will almost double their output, and enables them to maintain the position they have heretofore occupied in the Iron world.

Another important consolidation has been made by which the Clifton furnaces at Ironaton, the furnace at Gadsden and the Standard Coal Company, with 32,000 acres of Coal lands and with 30,000 acres at Ironaton and vicinity of Ore and Coal lands, have been acquired by the same parties who some time since bought the Gate City property and the Mary Pratt Furnace property here. The combination will represent over 70,000 acres of Ore and Coal lands. It is current rumor here that all these properties will be merged into one large company, to be financed by leading men in the financial world. The capitalization is said to be at $5,000,000, and T. G. Bush is named as president of the new company. John E. Searles and Abram S. Hewitt of New York, together with Baltimore and Richmond financiers, are credited with owning large interests in the company.

The Talladega Furnace has finally been sold, and Eugene Zimmerman of Cincinnati became the purchaser at $123,000. The property has been chartered under the name of the Alabama Coal, Iron & Railway Company. In addition to the furnace property, the same purchaser bought the Birmingham & Atlantic Railroad, which will give an outlet to the furnace output to Pell City, which is the present terminus of the East & West Road, which, it is said, the Seaboard Air Line Railroad will acquire. Connected with the furnace and included in the sale were 2000 acres of Ore lands and 1000 acres of Coal lands. Whether true or false, the same parties credited with the other deal are said to be behind this one also. It is probable that some of them are. The short railway puts them to Talladega and through a country where but slight effort would be necessary to greatly develop its possibilities and add an important addition to the railway feeders. Deals are on for Ore and Coal properties—some of considerable magnitude. The furnace property in Alabama that could be syndicated has been nearly all absorbed. Very few coke or charcoal furnaces are not "gobbled up."

The formal transfer of the Birmingham Rolling Mills to the Republic Iron & Steel Company has been finally made, and they have come into their own. The shutdown this year will be only a nominal one—two or three days this week—just long enough to let the men have some of the Fourth of July and to get over it. The new owners have not as yet made any announcements of intentions.

The question of miners' wages has been settled. They

get now 55½c. per ton, the highest wages they ever received. According to the scale just signed, 55c. is the maximum wages they can claim, no matter to what point Iron advances. Both sides express satisfaction with the new scale. Anyway the question won't be a disturbing element for another year. Briefly stated, mine owners can't pay less than 45c., and miners can't demand over 55c. per ton.

(By Telegraph.)

Sales of several thousand tons of export Iron have been made on the same basis as domestic values. The demand for the domestic trade is fair. The export trade is figuring on price and deliveries with sales. The scarcity of Iron limits transactions.

Pittsburgh.

Office of *The Iron Age*, Hamilton Building, PITTSBURGH, July 5, 1899.

(By Telegraph.)

Pig Iron.—The week has been quiet. The Bessemer Pig Iron Association, at their meeting in Cleveland last week, did not fix a price on Iron, for the reason that they had no specific inquiries and decided to let the market take care of itself. In the meantime several round lots of Bessemer Pig have sold at $19.50 and $19.60, while small lots from 25 up to 300 tons have sold at $20, Valley, equal to $20.75, Pittsburgh. All the Valley furnaces are well sold up and do not seem anxious to take on additional business unless the price is $20. In Forge Iron Valley furnaces are well sold up and quote $17 at furnace, equal to $17.25, Pittsburgh. Local Iron, however, is being sold at $17 to $17.25, Pittsburgh. There has not been much done in Foundry Iron in the past week, but No. 2 is quoted at $18 to $18.25, Pittsburgh. We quote Gray Forge at $17; Bessemer, $20, Valley furnace; No. 2 Foundry, $18 to $18.75; Gray Forge, $17 to $17.25; Bessemer, $20.35 to $20.75, all f.o.b. Pittsburgh. We note a sale of about 2500 tons of Standard Bessemer at $19.60, Valley, or $20.35, Pittsburgh. Also several small sales at $20, Valley; two sales of Gray Forge, one of 500 tons and one of 1000 tons, at $17, Pittsburgh. Also a sale of 50 tons and one of 125 tons of No. 2 Foundry at $18, Pittsburgh.

Billets.—There is a good deal of inquiry for Steel, particularly for Slabs, with little to be had in this market. Very high prices can be had for Slabs, and sales have been made at equivalent to $33 to $33.50, Pittsburgh. Four by four Billets could be had at lower prices.

Sheet Bars.—The shut down of the Tin Plate mills have eased up the situation in Sheet Bars a good deal, and Sheet mills report that they are now having very prompt deliveries; in fact deliveries have been anticipated in some cases. Prices are about $34, at mill.

Muck Bar.—We note a sale of 500 tons at $34, Pittsburgh. We are advised that Muck Bar has been sold at $35, at Eastern mill.

Spelter.—The market is higher, the smelters evidently having decided to pay the prices asked by the miners, for the time being at least. We quote Prime Western Spelter for prompt delivery at 5.90c., Pittsburgh, and future at 6c.

(By Mail.)

The labor situation in the Pittsburgh district is giving considerable uneasiness, through attempts of the Amalgamated Association to gain a foothold in mills which have been running non-union for years. This is notably the case with the Homestead Steel Works of the Carnegie Steel Company, Limited, but the statements in the daily press, to the effect that 2000 men walked out of this plant last week, are grossly untrue. The facts are that within the past two months the Carnegie Steel Company have discharged about 150 men employed at their different plants for joining the Amalgamated Association, and at the same time have given notice that under no circumstances will they give employment to any one who belongs to a labor organization. At this writing all the mills of the Carnegie Steel Company are in full operation, and while they have perhaps suffered some little inconvenience, to say that a strike exists is not borne out by the facts in the case. All the mills of this concern shut down on Monday at 6 p.m. to remain idle until Wednesday at 6 a. m. At several other mills in the Pittsburgh district there have been demands made for the signing of the scale, but without success. It is true that a good many concerns have already signed, but they are union mills and always sign as soon as the scale is presented. The Amalgamated Association has not yet gained a foothold in a single mill that has been running non-union. On Friday night, June 30, the Tin Plate mills of the American Tin Plate Company were shut down because no wage scale had been arranged for the year beginning July 1. It is not unlikely a conference will be held this week, and it is believed the Amalgamated Association will modify its demands. The American Tin Plate Company have offered to give their men the same advance in wages made by the Sheet mills, and this may be accepted. In the Shenango Valley labor troubles have broken out at blast furnaces, and six stacks at Sharpsville are idle to-day because the men refused to work unless granted an advance of 20 per cent. While the labor situation in general is serious, yet it is not critical, and it is believed the next week or two will see all the troubles that now exist cleared up. On Friday, June 30, the Valley furnacemen held a meeting in Cleveland, but no prices on Bessemer Pig were fixed, for the reason that there were no specific inquiries for Iron before the association. As soon as anything comes up in a definite way definite action will be taken. In the meantime the market will be allowed to take care of itself. In the past week Bessemer Pig has sold all the way from $19 to $20 at Valley furnace, the latter price being paid for a few small lots for early shipment. There is a heavy demand for Slabs, and $33 to $33.50 has been paid. Finished Material is strong all along the line, and Plates have shown a further sharp advance. The expected announcement of another advance in Nails and Wire by the American Steel & Wire Company, to become effective July 1, has not yet been made.

Ferromanganese.—There is not much doing. The local mill continues to quote at $85, in carload lots.

Plates.—There is no cessation whatever in demand for Plates, and the mills are getting still further behind in deliveries. Where a mill is found that is able to guarantee deliveries inside of 30 days, in such cases have sold Sheared Plates very close to 3c. at mill. We have advices of 2.75c. to 2.95c. having been done on Iron Plates at maker's mill. The situation in Plates for a long time has been altogether in favor of the mill, and is more so to-day than ever before. Consumers have great difficulty in getting shipments, particularly on contracts placed some time since at lower prices. On orders for Plates taken by the mills, without specific guarantee of delivery, we quote as follows: Tank, 2.40c. to 2.50c.; Shell, 2.50c.; Flange, 2.60c.; Marine, 2.75c.; Medium Fire Box, 2.75c.; Best Fire Box, 3.25c. to 3.50c. at mill. As stated above, Plates for prompt shipment have sold at very close to 3c. for Sheared at mill.

Sheets.—There is nothing of special interest to report in the Sheet trade this week. There is a good deal of inquiry, and some good sized orders are being placed for delivery up to close of the year. In some large distributing points, like Chicago, Cincinnati, St. Louis and other places, jobbers who have large stocks of Sheets bought at lower prices are quoting somewhat lower prices than the mills quote. It is expected that the deal for the consolidation of the Sheet mills will be taken up again in the fall and put through, but probably on somewhat different lines than at first proposed. The mills continue to quote No. 27 Black Sheets at 2.85c. to 2.90c.; No. 28, 2.90c. to 3c. As noted above, these quotations are often shaded by jobbers. In Galvanized Sheets there is in good demand and the market is very strong. For large lots we quote at 70 and 10 per cent., with 15c. freight allowance, while for small lots higher prices are asked.

Structural Material.—A good deal of business is being placed, and mills rolling Structural Shapes are crowded with orders. Considerable tonnage has been booked for delivery into next year. Probably 10,000 tons for New York delivery have recently been placed, much of it going to a local mill. There also continues to be a large tonnage in Beams and Channels shipped abroad. We quote: Beams and Channels, 15-inch and under, 1.75c.; 18 to 24 inch, 1.85c.; Angles over 3 inches and up to 6 x 6 inches, 1.75c.; Angles, 2¾ x 2¾ inches and smaller, 2.15c.; Bulb Angles and Deck Beams, 2.05c.; Zees, 1.75c.; Grooved Rolled Plates, 2.25c.; Tees, 1.80c., all f.o.b. Pittsburgh.

Rails.—We continue to quote light and heavy sections at $28 to $30, Pittsburgh, depending on the order and deliveries wanted.

Bars.—Deliveries of Iron Bars are very hard to get, most of the mills being oversold and practically out of

the market as sellers. Republic Iron & Steel Company have decided to remodel the Andrews Brothers, Mahoning Valley and Brown-Bonnell Mills at Youngstown, and the capacity of these plants will be very much increased, notably that of the Brown-Bonnell works. The tone of the market is very strong and prices are advancing. We quote Common Iron Bars at 1.80c. to 1.85c. in carload lots, half extras, at Valley mill, and are advised that there is no difficulty in securing the higher price when anything like prompt deliveries can be made. We quote high grade Iron Bars, made from all Muck Bar stock, at 2c. to 2.10c. at mill. There is also a heavy demand for Steel Bars, and prices are very strong and advancing. We quote Steel Bars at 2c. in common lengths, but if cut to specific lengths 2.05c. to 2.10c. is charged, half extras, at mill.

Merchant Steel. — The high prices ruling do not seem to have had the effect of checking demand to any great extent. All the mills are filled up with orders and considerably behind in deliveries. Prices are very strong, and we quote: Open Hearth Spring Steel, 2.75c.; Crucible, 3c. Mills quote 2.75c. for Tire, but jobbers are selling as low as 2.50c. in carload lots. Plow Slabs, 3-16-inch and heavier, 4 inches wide and over, are 2.50c. to 2.60c.; Sleigh Shoe Steel is 2.75c.; Cant Hook Steel, Open Hearth, 3.50c.; Wedge Steel, 3.50c.; Tool Steel, ordinary grades, 6.50c.; best grades, 10c. to 14c., depending on quality. An agreement exists among the mills under which terms have been established as follows: Bills paid within 10 days from date, 2 per cent. discount, or 60 days net.

Pipes and Tubes. —The National Tube Company are to hold a meeting in New York on Thursday, July 6, at which it is likely they will take over the Tube mills. We can report a continued heavy demand for Merchant Pipe and the market is very strong. A good deal of Pipe is going abroad, a local mill having entered an order the other day for 2000 tons for Germany. Prices are very strong, and where a mill is in position to make early shipment there is no difficulty in selling at 50 and two 10's. We quote Merchant Pipe at 60 per cent., with two 10's additional in small lots, maker's mill, and an extra 5 per cent. for carload lots, delivered. A good deal of Oil Well drilling has been shut off owing to the very high prices for Oil Well Supplies, but in spite of this there is still enough tonnage to keep the mills making Casing and other Oil Well goods very busy. In fact, some of the mills are sold up for three or four months and are out of the market as sellers. We quote Screw and Socket Joint Casing, 3¾-inch and larger, 40 per cent.; Inserted Joint, 35 per cent., with an extra 5 per cent. to dealers. There is a heavy demand for Boiler Tubes and all the mills are much behind in deliveries. The Boiler Tube mills have adopted the policy of making prices in less than carload lots f.o.b. maker's mill, instead of allowing freight as heretofore. We quote: 1¼ to 1½ inch Iron and Steel, 40 per cent. off list; 1¾ to 2½ inch, Iron, 50 per cent.; Steel, 55 per cent.; 2¾-inch and larger, Iron, 55 per cent.; Steel, 57½ per cent., with an extra 5 per cent. to dealers. On carload lots freight is allowed and on less than carload lots prices are f.o.b. maker's mill.

Skelp. — Skelp is scarce and very high prices are being paid for early delivery. Grooved Skelp, narrow widths, has sold at 2.24c., and Sheared Skelp at 2.50c. We quote Iron and Steel Grooved Skelp at 2.15c. to 2.25c.; Sheared Iron and Steel Skelp, 2.35c. to 2.50c. The size and deliveries wanted largely determine the price.

Connellsville Coke.—Last week there were 17,453 ovens in the Connellsville region active and 1211 idle, the production for the week being 180,498 tons. Coke is scarce, practically the entire output of the Connellsville region being under contract. We continue to quote strictly Connellsville Furnace Coke at $2.25 and Foundry Coke at $2.15 to dealers and $2.30 to consumers, all in tons of 2000 lbs. at oven.

Cleveland.

CLEVELAND, OHIO, July 3, 1899.

Iron Ore.— The freight-carrying charge for the transportation of Iron Ore from the head of Lake Superior to Lake Erie ports went up at a bound last week to $1. This advance at one step from 75c. or 80c., which constituted the best prices paid previously, was in some respects a rather surprising one, although existing conditions made it inevitable. It was all due to the fact that the activity in the movement of grain forced the rate for the movement of that commodity up to beyond an equivalent of $1 on Ore, and of course the latter was obliged to follow if shippers desired to secure any boats. Naturally vessel men are happy. Ore shippers are in almost an equally good humor, despite high prices, for the reason that June reports, which are just now coming in, show that some of the principal Ore shipping ports have already sent forward almost half as much Ore as was handled during the whole of last season. Labor troubles of greater or less magnitude continue to hinder dispatch, and rumors are afloat concerning new organizations of Ore unloaders and other labor on the docks. The great Steel carriers of the lakes are again engaged in breaking records. The latest is that of the new steamer "Henry W. Oliver," which has just brought down from Ashland to Cleveland a cargo of 7014 gross or 7856 net tons of Ore. The barge "Fritz" of the Rockefeller fleet a few days ago brought to Conneaut 7952 net tons, and being towed by the steamer "Samuel F. B. Morse," the largest on the lakes, the one engine moved at the rate of 11 miles per hour cargoes aggregating 15,232 tons of Ore. Practically no sales of Ore are reported, but prices for 1900 are already under discussion.

Pig Iron.— With the advent of $20 Foundry has come practically a cessation of transactions. A few carloads of No. 1 Foundry have been disposed of this week at $19, $19.50 and $20, respectively, while sales of No. 2 in about equal quantities have been reported at prices ranging in the neighborhood of 50c. per ton less than No. 1. There is of course no Bessemer for sale, and Lake Superior Charcoal is quoted nominally at $20.50 on Lake Erie dock, although there is none for sale. Gray Forge is bringing $17 in the Valley.

Finished Material. — The past week has shown no diminution in the activity of inquiry, but the majority of sales agents have no material of any kind for sale at anything approaching early delivery. They are in better shape on Beams and Channels than on anything else, and even with these the best promises obtainable are four to six weeks. Sales of several hundred tons of Structural for local consumption are reported.

The English Iron Trade.

Summary.—A very satisfactory condition of affairs has ruled during the past week as regards pig iron. The market has been steadier, speculative business has been kept within more reasonable bounds and legitimate trade has increased, with an accompanying rise in prices. The finished iron trade is active, while some very large orders have been booked for steel rails. Engineers are very fully occupied and shipbuilders, while in receipt of comparatively few new orders, have plenty of work on hand. Reports from abroad show trade to be in a similarly prosperous condition.

Pig Iron.—The market has been remarkably steady all the week compared with the conditions lately obtaining. In Middlesbrough the business reported is highly satisfactory. Further advances have occurred in prices, while the volume of business has increased, and altogether one of the best weeks this year has been experienced. Not that speculation has ceased, for, on the contrary these markets have been active, but more legitimate business has been transacted and the amount of Iron disposed of for actual trade purposes has been larger. No. 3 G.M.B. has risen to no less than 64 shillings per ton, and some makers are quoting 6 pence per ton higher. Shipments to Germany are heavier than ever, and indeed constitute a record. Other descriptions of Cleveland Iron are also advancing, and trade prospects are very promising. The trade in Barrow Hematite is unusually strong, the local demand being heavy, while large quantites of Iron are being dispatched to other districts. Mixed numbers of Bessemer Iron are now quoted in the district at 71 to 72 shillings per ton. In Lancashire, owing chiefly to the scarcity of available supplies, there has not been much business transacted during the past week. Stocks of local hands are practically depleted, and only small orders can be booked for Lincolnshire and Derbyshire descriptions. In South Staffordshire makers still continue to experience great difficulty in meeting their engagements, the local make being strictly limited and prices correspondingly high.

Manufactured Iron and Steel.—All branches of the Finished Iron and Steel trades are busily engaged and prices continue to move upward. Advances have been made in the Cleveland district, while in Barrow the recent high prices are easily maintained in face of the heavy demand existing for all qualities of Steel and for Rails and Ship Plates in particular. Lancashire manufacturers report that the number of orders received shows no signs of the diminution prophesied in some quarters on the advance of 10 shillings per ton in Bars, &c., declared last week, and that on the contrary business has if anything increased. Still prices show considerable variation and there is a lack of uniformity in quotations corresponding to the lack of combination on the part of manufacturers themselves. In South Staffordshire, where the Iron trade is in a condition of unexampled prosperity, advances varying from 5 shillings per ton, as in the case of Hoop Iron, to 10 shillings per ton for Strips, &c., have taken place. The question

of the abolition of discounts has again come up for discussion in the district and excites much attention, but no decisive course of action has as yet been determined upon.

Engineering and Shipbuilding.—The numerous colliery undertakings now in hand in Yorkshire, in Durham, in South Wales and in Scotland, and indeed in all the British coal fields, is entailing much activity in engineering trade circles and a large amount of work of a varied description connected therewith, and which includes Coal cutters, haulage appliances, lighting installations and screens and washeries, engages the attention of engineers in all parts of the country. An equally active state of affairs obtains as regards locomotive building and boiler making, and in many instances fresh orders have had to be declined through inability to guarantee delivery within the time stipulated for by would-be customers. Shipbuilders still complain of the falling off in orders for new vessels, although the effect of this decline in the demand for new tonnage has little effect upon the activity prevailing at the chief centers of the trade, much of the work in hand being already months in arrears as regards delivery.

Comparison of Prices.—The annexed table shows the current prices compared with those of last week, and of the corresponding period last year:

	June 23, 1899.	June 16, 1899.	June 24, 1898.
Iron Ore—	s. d.	s. d.	s. d.
Rubio, Middlesbrough	15 9	16 6	14 3
Rubio, Cardiff	15 3	15 3	13 6
Pottery Mine, North Staffordshire	14 6	14 6	12 6
Hematite, West Coast (at mines)	16 0	15 6	13 6
Pig Iron—			
No. 3 Foundry, Middlesbrough	64 3	63 0	40 3
Warrants, Middlesbrough	64 4½	63 4	39 11
Scotch Warrants, Glasgow	64 8	66 7	46 0
Hematite Warrants, West Coast	71 4	68 9	50 2
Cold Blast (Foundry), South Staffordshire	105 0	110 0	105 0
Welsh Hematite, Cardiff	71 3	69 0	.....
Manufactured Iron and Steel—	£. s. d.	£. s. d.	£. s. d.
Marked Bars, South Staffordshire	8 10 0	8 10 0	7 10 0
Common Bars, South Staffordshire	7 10 0	7 10 0	6 0 0
Steel Rails, Middlesbrough	5 2 6	5 7 6	4 10 0
Steel Rails, West Coast	5 2 6	5 7 6	4 10 0
Steel Rails, Cardiff	5 7 6	5 15 0	.....
Steel Angles (eng.), Middlesbrough	7 0 0	7 0 0	5 13 9
Steel Angles (eng.), Glasgow	6 15 0	6 15 0	5 15 0
Steel Plates (ship), Middlesbrough	7 2 6	7 2 6	5 18 6
Steel Plates (ship), Glasgow	7 7 6	7 2 6	5 17 9
Tin Plates, Bessemer I.C. Cokes, South Wales	s. d. 13 0	s. d. 12 9	s. d. 10 0

New York.

Office of *The Iron Age*, 232-238 William street, New York, July 5, 1899.

Pig Iron.—Eastern furnaces have again advanced their prices. Consumers who were supposed to have fully covered their requirements for a long time to come appear again and again in the market. The scarcity of Iron for prompt delivery continues and high prices are being paid. We have not heard that the 5000 ton order for Lynn, Mass., has yet been placed. We quote as follows: Lehigh and Schuylkill Irons, No. 1 Foundry, $20 to $20.50; No. 2 X, $19.25 to $19.75; No. 2 Soft, $18 to $18.25; No. 2 Plain, $18 to $18.50, and Gray Forge, $17 to $17.25; Southern brands are quoted: No. 1 Foundry, $19 to $19.25; No. 2 Foundry, $18 to $18.25; No. 1 Soft, $18.25 to $18.50; No. 2, $17.75 to $18, and Gray Forge, $16.75 to $17.

Steel Rails.—The market is very quiet and prices remain nominally unchanged for large lots, at $28 to $29.

Track Fastenings.—We quote Angle Bars 1.75c. to 1.80c.; Spikes, 1.80c. to 1.90c., and Bolts and Nuts, 2.25c to 2.30c.

Finished Iron and Steel.—Some good sized transactions have been closed. Among them we note 5000 tons for a very large up-town apartment structure and 5000 tons to an architectural plant. Among the minor lots we note 300 tons for the Telephone Building. An enormous tonnage is in sight in this district. Besides the large amount of building work, there is a good deal of dock work coming up, among it being the Long Island terminal, the sheds of the Delaware, Lackawanna Railroad, at Hoboken, and a number of large power houses. Report has it that the great Quebec Bridge has been taken by an American firm, and that the material goes to Pittsburgh. A fair amount of export work keeps coming up. We quote as follows: Beams, 1.90c. to 1.95c.; Angles, 1.90c to 1.95c.; Universal Mill Plates, 2.50c. to 2.60c.; Tees, 1.95c. to 2c.; Channels, 1.90c. to 1.95c.; Steel Plates are 2.50c. to 2.55c. for Tank, 2.65c. to 2.75c. for Shell, 2.75c. to 2.90c. for Flange, 2.90c. to 2.95c. for Fire Box, 2.90c. to 3c. for Locomotive Fire Box, on dock. Refined Bars are 2c. to 2.05c. and Common Bars are 1.80c. to 1.85c., on dock. Soft Steel Bars, 2.05c. to 2.10c.; Steel Axles, 2c. to 2.10c.; Scrap Axles, 1.90c. to 2c.; Links and Pins, 1.75c. to 1.80c.; Hoops, 2.20c., at mill; Best Iron Boiler Rivets, 2.50c. to 2.75c., delivered; Steel Structural Rivets, 2c. to 2.10c.

Rogers, Brown & Co., Pig Iron merchants, Empire Building, announce that their arrangements as selling agents for the Tennessee Coal, Iron & Railroad Company will terminate on August 15.

Metal Market.

Office of *The Iron Age*, 232-238 William street, New York, July 5, 1899.

Pig Tin.—A continuance of the "bull" movement which commenced in the London market about a week ago has driven prices upward and advances of considerable moment have been made during the last week. Spot is quoted in this market now at 27⅜c. to 27⅝c. Advances made in London during the last week aggregate almost £5, the cables to-day quoting £123 10s. for spot and £124 5s. for futures.

Copper.—Further improvement of tone is exceedingly noticeable in this market at this writing. Prices are without doubt a shade firmer. Contracts of better volume are reported and all indications show that the metal is in a stronger position than it has been for many weeks past. We quote Lake Superior Ingot, 18¼c. to 18½c. for spot. In certain quarters it is said that it is impossible to secure the metal at a figure lower than 18½c. Electrolytic Cakes, Wire Bars and Ingots are still quoted 17¼c. to 17½c., and Casting Stock is to be had at 17c. to 17¼c. London closed to-day £77 for spot, which is an advance of 17s. 3d. over last week's figure. Three months' futures are quoted on parity with the spot quotation. Best Selected is quoted £80 10s., an advance of 10 shillings.

Pig Lead.—The market is firmer and sales in carload lots were made at 4.50c., which price is now bid, and 4.55c. is the asked price. London is unchanged at £14 7s. 6d. St. Louis is also unchanged at 4⅜c.

Spelter—Is a little easier on spot, but firmer on future deliveries. We quote spot 6c. to 6¼c. July and August is quoted 5.75c. to 5.85c. St. Louis is firm at 5.75c., and London has declined to £25 1s. 3d. Ores have advanced, and it is said that good lots have been purchased at $43 to $44. It is intimated that the miners have much the better of their fight with the smelters, and that the smelters are already purchasing good quantities at the price quoted above.

Antimony—Is without change in this market, and Hallett's remains firm at 10c., while Cookson's is still quoted at 11c.

Nickel.—There has been no change, and the market continues firm. Canadian Nickel is quoted 38c. to 40c. for lots larger than 1000 lbs., and 40c. to 50c. for smaller quantity.

Tin Plate.—The Tin workers have, according to local reports, arrived at no definite conclusion as yet regarding the scale. It is anticipated that the decision may be announced in Chicago to-morrow. The prices have experienced no change, and remain firm at $4.05 to $4.10 for 100-lb. Cokes, New York delivery.

Open Hearth Plants for the American Steel & Wire Company.

The American Steel & Wire Company are erecting in Cleveland in connection with the Newburgh Steel Mill, formerly the Cleveland Rolling Mill, four 50-ton Wellman rolling furnaces with basic lining, 14 Duff producers, a Wellman charging machine, a double ingot stripper, a scrap yard and coal trestles. The boilers have been purchased from the Cahall Company. The Riter-Conley Mfg. Company are the contractors for the steel plant, the Variety Iron Works of Cleveland have the buildings and Miller Brothers are the contractors for the foundations and brick work.

At the Washburn & Moen department at Worcester, Mass., a similar plant is being put in, the Riter-Conley Mfg. Company being the contractors for the wire work on the furnaces, while Norcross Brothers are to erect the buildings. The rest of the work will be done with their own construction force of the plant. There has also been purchased, for handling the additional output, a reversing blooming mill for which the Frank-Kneeland Company are the contractors. The engines are to be built by the E. P. Allis Company and the boilers will be furnished by the Cahall Company.

The Greater America Exposition opened on Saturday at Omaha, Neb. The exposition, which occupies the same grounds used for the Trans-Mississippi Exposition last year, is devoted largely to exhibits from the new colonies of the United States, which make a fine display.

QUOTATIONS OF IRON STOCKS DURING THE WEEK ENDING JULY 5, 1899

Cap'l Issued.		Sales.	Thursday.	Friday.	Saturday.	Monday.	Tuesday	Wednesday
$47,100,000	Am. S. & W., Common	31,716	53⅜-53¾	53⅜-54	53⅜-54	.....	.....	53¾-55½
38,150,000	Am. S. & W., Pref. (7 % Cu.)	2,770	-95⅛	94½-95	94 -94¼	.....	.....	-95
9,250,000	Col. Fuel and Iron	825	44¼-45	.....	-44¼	.....	.....	44⅜-44¾
46,484,300	Federal Steel, Common	18,745	58¼-59	58 -58⅜	-57¾	.....	.....	58 -59⅛
53,253,500	Federal Steel, Pref. (6 % Non-Cu.)	4,870	81¼-81⅞	80⅞-81¼	81 -81⅛	.....	.....	81 -81⅞
20,000,000	Tennessee Coal and Iron	17,905	63⅝-65	63⅞-64⅞	64½-64⅞	.....	.....	64½-66⅞
7,974,550	Cambria Iron, Phila*	396	-44¾	.....	-45	.....	.....	-45
16,000,000	Cambria, Steel***	37,595	20½-20¾	20¾-21¾	21¾-22¼	.....	.....	22¾-24
5,000,000	Penna. Common, Phila	249	-84	84½-85	84 -86	.....	.....	85¾-86
1,500,000	Penna. Pref., Phila	.....	.....	.....	.....	.....	.....	-90
28,000,000	Tin Plate Common, New York	1,575	-34¼	33⅞-34¼	-34¼	.....	.....	34 -34⅛
18,000,000	Tin Plate Pref., N. Y. (7 % Cu.)	552	.....	-83	.....	.....	.....	-84
28,000,000	Tin Plate Com., Chic.	150	-34	.....	.....	.....	.....	-34¼
18,000,000	Tin Plate Pref., Chic. (7 % Cu)	460	-83⅛	82¾-83	.....	.....	.....	.....
32,000,000	National Steel Common, Chic.	550	-49½	-49¾	.....	.....	.....	-50⅛
27,000,000	National Steel Pref., Chic. (7% Cu)	50	-89½	.....	.....	.....	.....	.....
32,000,000	National Steel, Common, N. Y.	3,185	49¼-50	49 -49⅞	49⅞-50	.....	.....	50 -50⅛
27,000,000	Nat'l Steel, Pref., N. Y., (7 % Cu.)	1,305	89 -89¼	-89	89¾-89⅞	.....	.....	89¾-90
7,500,000	Bethlehem Iron	2,995	-60	60 -60¼	-61	.....	.....	61 -61¼
.....	Bethlehem Steel Rights	8,415	22 -22⅛	22¼-22½	22⅝-23	.....	.....	22¾-23⅜
12,500,000	Pressed Steel, Common	550	-51	-49¾	.....	.....	.....	51 -51½
12,500,000	Pressed Steel, Pref. (7 % Non-Cu.)	100	-82⅛	.....	.....	.....	.....	.....
19,000,000	Am. Steel Hoop, Common	900	28¾-29	.....	-28	.....	.....	27½-29
14,000,000	Am. Steel Hoop, Pref. (7 % Cu.)	990	-76	-77½	.....	.....	.....	77 -77¼
.....	Am. Car & Foundry, Common	5,336	17½-18	17¼-17⅝	.....	.....	.....	16¾-17⅛
.....	Am. Car & Foundry, Preferred	1,401	61¾ 62	60¾-61	.....	.....	.....	.....

* Par $50. ** Par $100 *** $1.50 per share paid in. Late Philadelphia and Chicago sales by telegraph.

Bonded Indebtedness: Am. S. & W., $730,000; Am. Tin Plate, none; Am. Steel Hoop, none; Federal Steel Co., $13,200,000 Illinois 5 %, $7,417,000 E. J. E. R. R. 5 %, $1,600,000 Johnson 6 %, $6,732,000 D. & I. R. R. R. 5 %, $1,000,000 2d D. & I. R. R. R. 6 %, $10,000 land grant D. & I. R. R. R. 5 %; National Steel, $2,561,000 6 %; Tennessee C., I. & R. R. Co., $8,367,000 6 %, $1,114,000 7 %, $1,000,000 7 % cu. pref.; Pennsylvania Steel: $1,000,000, Steelton 1st; $2,000,000 Sparrow's Point 1st, $4,000,000 consolidated, both plants; Bethlehem Iron, $1,351,000.

Iron and Industrial Stocks.

The holidays have, of course, interfered considerably with the volume of trade. The markets, however, opened strong to-day, and the majority of industrial stocks show advances. There was heavy trading, too, in Philadelphia, Cambria rising 1¾ points.

There has been another effort to secure an injunction against the Federal Steel Company on the payment of the dividend on common stock.

	Bid.	Asked.
International Silver, Common	13½	...
Otis Elevator, Common	32	34
Otis Elevator, Preferred	89	91
H. R. Worthington, Common	50	55
H. R. Worthington, Preferred	112	116
Cramp's Shipyard Stock	83	86
Pratt & Whitney, Common	3½	5
Pratt & Whitney, Preferred	38	48
E. W. Bliss, Common	138	...
E. W. Bliss, Preferred	125	...
U. S. Projectile	95	...
Barney & Smith Car, Common	21	25
Barney & Smith Car, Preferred	81	86
International Pump, Common	24	26
International Pump, Preferred	66½	68
Republic Iron & Steel, Common	17	18
Republic Iron & Steel, Preferred	61½	62

The Ohio Valley Gas Company of Sewickley, Pa., have declared the regular quarterly dividend of 1½ per cent., payable July 1. The Ohio Valley Gas Company have also secured a controlling interest in the Independent Natural Gas Company, at Sewickley, Pa., and the two concerns will be consolidated.

The Philadelphia Company, at Pittsburgh, who recently bought out the Philadelphia Natural Gas Company and other interests, last week purchased nearly all of the capital stock of the Equitable Gas Company, a Pittsburgh corporation organized in 1889 by certain manufacturers to supply mills and factories in the Lawrenceville district, in Pittsburgh. The company originally laid a 24-inch main to the Murraysville field and later extended lines into Armstrong County, where the company had extensive holdings in gas producing property. The Equitable Gas Company were capitalized at $1,000,000, but the entire investment in the business is said to have been $1,750,000. The company supplied from 8,000,000 to 10,000,000 feet of gas per day and declared dividends. The Philadelphia Company show net earnings of $1,273,638 for the first four months of 1899. Deductions from incomes, such as interest, &c., $646,673; surplus earnings, $626,965; dividends on common out of the surplus, $93,750; surplus to profit and loss, $535,215. In the four months the reported earnings are equal to 7.7 per cent. on the $8,100,000 common, which, it is said, represents the amount of common outstanding. The total authorized issue is $15,000,000.

The American Shipbuilding Company have declared the first quarterly dividend of 1¾ per cent. on their preferred stock. They own shipyards at Cleveland, Lorain, Detroit, Chicago, Bay City and West Superior, all on the great lakes. They now have 20 vessels in course of construction in their yards.

The Bethlehem Iron Company report for the 11 months ended April 30, as follows: Total receipts, $4,200,000; total charges, including taxes, interest, depreciation, &c., $3,150,000; net profit, $1,050,000; cash dividends (12½ per cent.), $600,000; amount to credit of profit and loss, $3,320,000. The excess of current receipts over current liabilities at the same date was $3,645,681. Estimating on the above basis, the Bethlehem Steel Company's earnings for the year would be $1,145,000, the fixed charges $450,000, leaving a balance applicable to dividends on capital stock of $695,500, or more than 4½ per cent. Unfilled orders on the books May 1 amounted to $6,716,900.

The Maryland Steel Company and the Cambria Steel Company have contracted with the Westinghouse Electric & Mfg. Company for several Westinghouse direct current motors for equipping their steel mills. In this industry electricity enters as a great labor saving factor, and has enabled those who have adopted it to operate their works far more economically than with any other motive power. Steel mills where electricity is economically supplied from a central station require a provision of less than one-fifth of the power previously provided when separate steam engines were used. Such is the evidence of experts. Hoopes & Townsend, Philadelphia, have equipped their works with three Westinghouse generators aggregating 1000 horse-power. They supply current for arc and incandescent lamps and for operating a large number of electric motors in their factories.

Although showing a material falling off from the record made in May, the capitalization figures of large industrial corporations of $1,000,000 and over chartered under New Jersey laws during the month of June reached a total of about $240,000,000. Delaware incorporations of the same class made a total of $65,500,000, and other companies incorporated last month in various States amounted to $60,000,000 more, giving a grand total of all large industrial incorporations in June of $365,500,000. A large proportion of this incorporation, however, is not new, but merely a rearrangment by consolidation of properties previously in existence.

The War Department has decided to shut down the Government Arsenal at Frankford, Pa., for six weeks, during which time a number of improvements will be made, the most important of which will be the installation of machinery for the manufacture of cartridges of .38 instead of .45 caliber.

A cable dispatch from Glasgow, Scotland, reports that the Clyde shipbuilding returns for the half year just ended break all former records. They show that 125 vessels were launched, representing an aggregate tonnage of 234,877. The yards have at least six months' work at full time now in hand.

A reservoir of natural gas was struck last week on the Charles Pardee farm at Junius, a town five miles northwest of Geneva, N. Y., which is said to be the most important strike of the kind yet made in that territory. Experts have been employed to investigate the probability of the permanence of the supply. If the indications warrant it the gas will probably be piped to Geneva.

English, American and German Machine Tools.

Arthur Greenwood presented at the Engineering Conference in London the following paper on machine tools, which caused a good deal of discussion: The writer proposes to divide machine tools into four classes, namely: 1. Planing machines, with which may be grouped shaping, slotting and machines used for cutting straight surfaces of metals with knife edged tools by reciprocating motion. 2. Lathes and boring machines, for cutting circular surfaces of metals with similar knife edged tools. 3. Milling machines for cutting straight or curvilinear surfaces of metals with circular rotary saw like cutters. 4. Automatic machine tools, for special purposes.

It is upon the planing machine that the engineer relies as the basis in mechanical construction, the first requirement being a true flat surface; secondly, speed in obtaining that result; and, thirdly, economy in wear and tear and facility of maintenance in an efficient state. Strength and rigidity are the main factors in obtaining these results. These being assumed there has to be considered what is the best form of bed surface, the best section of cross slide and the best driving gear.

In the earliest planers acute V surfaces were used, doubtless to resist the strain of side cuts and to take up the wear automatically. These V's, of from 60 to 90 degrees, have been gradually flattened, with beneficial results as regards scoring, until 140 degrees is a common practice; but all V's are difficult to make a good job in the first instance, and still more difficult to correct when by wear they become hollow or assume a "wind." The latest practice is to use flat surfaces with square or angular lips, and taking up slips to take the side strains. They much more easily effect a thoroughly good job in the first instance, as bed and table can be scraped to surface plate independently and are much more readily tested and readjusted when in use. The flat bed is gradually being adopted in England and to a less extent in America and on the Continent; but even here the prejudice in favor of V beds dies hard. In some dozen large planers just completed or under construction by the writer's firm V's have been specified by the purchasers in most cases, sometimes with a central flat surface; only in two or three cases have the makers been allowed to carry out their recommendations of flat surfaces alone. The latest practice in cross slides is the square lip on the upper side, certainly in America and to some extent in this country, particularly for heavy machines. Much has been attempted in the past to make planers duplex in their action, either by reversing the tool or arranging the machine with two sets of uprights and cross slides, so as to cut in both directions; either method obviously can only be used with advantage in plain surface work, and both systems are seen more in England than in America or Germany. To economize time in running back the Americans are leading the way by using very quick return of table up to and even beyond four times the cutting speed This entails very perfect gearing and accurate reversing gear, friction clutches being often used; it absorbs, at any rate momentarily, a large amount of power, as those using electric driving can readily see by watching the ammeter.

For driving gear in this country the screw is much in favor; it works smoothly and simplifies the gearing, but is not quite so economical in power as well adjusted rack gearing. The Americans generally prefer rack gearing and are obtaining splendid results with engine cut fine pitched gear. The compromise between the screw and the rack originated by Sellers in the States is largely used there, and has been followed by some English and German makers. Unless the gearing is very accurately pitched there is a material increase in the power used. The most economical planer for general work would appear to be the single acting machine, with a very high speed of return, and a most accurate reversing gear easily adjusted while the machine is running, so as to reduce the idle time of the machine to a minimum.

Lathes.—In England the upright V, generally in conjunction with a flat, was originally used for lathe beds. Now, however, flat surfaced beds with angular edges, or, as they are sometimes called, "gib" beds, are almost invariably used, being generally considered more robust and more readily kept in repair. The Americans, however, with one or two notable exceptions, adhere to the upright V, generally double and this constitutes the leading difference between Eastern and Western lathes. The saddle mounted on the V's moves with less friction, but for heavy cuts this advantage is lost, as the saddle must be weighted or retained by a lip to prevent the cutting tool running in. As regards head stock and spindle, the parallel neck is more used in the States than in this country, where conical necks are generally used for small lathes and parallel ones for the heavier ones. Cones and belts for traverse gear are now being generally discarded in favor of direct gearing both in England and in the States, and the lathe head stock of the future, with a variable speeded electric motor combined, will soon see the end of belt driving, at any rate so far as lathes are concerned. In lathes generally the Germans follow more closely the English than the American type. Before leaving lathes one must remark the very general adoption, particularly in America, of the horizontal face lathe or boring mill, which offers facilities both for speed and accuracy. Turret lathes may be grouped with automatic machinery.

Milling.—This is one of the earliest known ways of cutting metal, doubtless temporarily eclipsed by the development of planers and tools under class 1. Both in America and in this country manufacturers of articles where great repetition occurs, such as rifles, sewing and some textile machinery, have used milling for the past 40 or 50 years, and the development of this system of cutting metal, as seen in the modern universal miller in a well equipped toolroom, leaves little to be desired for rapidity, accuracy and general adaptability. During the past 15 years milling machines have been largely introduced for heavy work, notably for locomotive and engine builders, and in this direction English makers have certainly been to the fore. Some of the continental makers have carried milling to questionable lengths, particularly in France, where one has seen work being milled which might have been more advantageously done on planing machines. In England and America and in France vertical millers are principally used for plain and curvilinear work. Many are also made on the planing machine type, with either horizontal or vertical spindles or both. This is an excellent type of machine, particularly for straight work. The Germans often go to the length of combining this type of machine with a planer, but as a rule combination machines are to be avoided.

Automatic Machinery for special purposes is now coming very much to the front, chiefly in America, but both this country and Germany are moving in the same direction. Where great repetition of parts is required, there can be no doubt of its advantage. A general type of machine is a hollow spindle lathe with automatic feed and chuck for the material to be operated upon, a saddle with turret rest, back and front transverse slides, all driven automatically from a cam shaft. This machine will produce studs, screws, bolts and other analogous work from the solid metal bar. By using special chucks, wheels, pulleys, cylinder covers and other parts of engines or machinery may be finished at one fixing, as against innumerable chuckings in the ordinary boring and turning lathes. The advantages claimed for this system are that a comparatively unskilled operator may attend to a number of machines, the tools and tool adjustment being controlled by a skilled mechanic. The enormous advantage of this system of manufacture must not be sacrificed by attempting to do too much, and discrimination is required to see that work which can be better done by separate operations is not attempted on this class of tool. In turning work from the bar, such as studs, bolts &c., care must be taken that the advantage gained by saving of labor is not lost by waste of material, and articles having large differences in diameter may often be advantageously forged and finished in other types of automatic or other lathes

Now that the gearing of nearly all machine tools is engine cut, automatic gear cutters are largely used. One attendant serves quite a number of machines.

In machine tools generally, with some recent exceptions, the Germans have followed pretty closely the English lines, but have produced cheaper and lighter tools and have lacked in originality. The Americans, on the other hand, have struck out on lines of their own, based on those of some of the earlier English makers. They are generally well made, convenient to manipulate, but of lighter construction, and have not the endurance of the English tools.

The English tool makers for a long time were practically the makers for the world. For strength, stability and downright wearing capacity they still hold the first place; the one reproach that may be made against them is their comparative slowness in producing tools required to meet the growing and changing requirements of the trade, which gives the Americans a certain pre-eminence. Probably one of the reasons is that here tool makers attempt too many varieties. Nearly every maker produces all the various classes, while in America they generally confine themselves to one. Whether this is arrived at by mutual arrangement or is the result of their practical nature, the result is satisfactory in producing machine tools of standard sizes suited to the requirements of the hour and, by reason of this standardization, at an economical cost.

Reports have been current relative to the control of the famous Chapin mine. It is a fact that some time since the National Steel Company acquired the property for about $3,750,000, the ore reserves being reported to be enormous.

The Supreme Court of Missouri has handed down a decision upholding the anti-trust law of the State. Seventy-three insurance companies are thus deprived from doing business in Missouri.

Lake Iron Ore Matters.

DULUTH, July 1, 1899.—The Senate of Michigan has defeated the tonnage tax on iron ore and copper that the House passed not long ago, and the mineral interests breathe easier. This tax was to have been 1 cent per ton on ore and graduated on copper to a limit of ½ cent per pound. It would have made the mines of the upper peninsula pay one-fifth of all State taxes, while all the property on the peninsula now pays about one-tenth, a fair proportion. Under the bill the copper mines of Houghton County would have paid into the State Treasury the sum of $765,000 on their last year's business.

At Ironwood the Oliver Company are operating two steam shovels in the stockpiles of the Norrie and Pabst, and at Bessemer one in the Tilden, and with the daily hoists the ore is coming from these mines with tremendous rapidity. In the East Norrie the company have found a new lens of ore that is of excellent size and quality, and gives the greatest cause for congratulation. It is very wide and is believed to be a continuation of the ore body the Aurora is to open into soon on the thirteenth level. It was found by a cross cut through 40 feet of soft hanging wall.

On the Mesaba range the East Sparta has been proved a mine, and some shipments will perhaps be made this year of what is likely to prove as good ore as has been found in quantity on the Mesaba range. Just east of this explorations are under way by G. E. St. Clair and others with excellent prospects. In Section 25, close by, L. Roucheleau and D. T. Adams are exploring and have a mine of considerable size and good quality. They are on lands that belong to the Monarch Iron Company. The original Sparta Mine will ship this year about 350,000 tons, and is getting a very satisfactory price for most of its output, though some was sold pretty early. Adams Mine suffered a serious fire last week, burning out No. 2 shaft completely, so that a new shaft will have to be sunk. This is now under way, and in the meantime a skip road is being built into the open pit, from which part of No. 2's ore came, and mining will be continued thence. The fire may decrease Adams output for the year to some extent, though stockpile shipments are now going on from shafts 1 and 3, and all men formerly at the location are still busy there. At Biwabik Mine in ten hours recently a shovel crew stripped and hauled over ½ mile to the dump 1700 yards of earth, equaling 680 cars, which is the record for such work on the range.

Old Lee Mine of the Minnesota Iron Company, at the town of Tower, nearly 2 miles from its main workings there, is being reopened, though at present diamond drill operations are all that is going on. The resumption of work at the mine is giving much confidence in the future of Tower. The Oliver Company have closed their option on this range for the Silbey & Bearinger Company, lying east of the Savoy Mine, and in which they have been exploring for a long time. The ore body of the Pioneer, Zenith and Savoy is found there, and to the east as well, where the Oliver Company's holdings extend. The company have considerably over 2 miles on the strike of the lode, and their Pioneer Mine is developing into one of the biggest properties in Minnesota, and the Pioneer differs from these other mentioned Oliver properties close by largely in that it has had more exploration and development. Not that all these will prove second Pioneers, but their future is yet unknown. But all explorations are not successful. J. M. Underwood, who has been exploring with diamond drill for some time on the east Vermillion, has given up and pulled his drills, nothing that would warrant continuation being found. The Oliver Company have begun work on the Roy claim, close to Tower Junction, where excellent indications of ore have been known for years to exist. The company have thus trenched quite closely on territory that has been regarded as within the purlieus of the Minnesota Iron Company.

As showing the activity of explorations on the various Minnesota ranges, it is interesting to note that one firm of diamond drill men has 17 drills working now on these two ranges alone, and several others have a lesser number, so that there are probably about 25 drills working there to-day. In most cases this exploration is meeting with encouragement to a reasonable extent. Several explorers are working with churn drills or sinking test pits, so that the number of drills alone does not give the full idea of the development going on. The new steel interests of the Republic and National are understood to be interested in some of the work going on.

The Pioneer & Lake Angeline Company have begun work on the Mallman Mine, located 12 miles east of the most easterly operation on the Mesaba range, and will explore and develop very thoroughly. There is known to be a large body of ore there, but it is of a grade that has been at a discount, low in iron and high in silica. It is mined cheaply and is wanted for certain purposes, and the royalty is very low, 5 cents a ton, I am told. This mine was opened and explored eight years ago, and has been idle since. It is 4 miles east of the track of the D. & I. Railroad, running to Vermillion range.

Forty-three ore ships cleared for D. & I. Railroad docks during the past seven days, carrying about 200,000 tons. This is probably the biggest week's work on record.

At the Marquette range the old Taylor Mine, near L'Anse, the most westerly property on that range, is to be reopened after 16 years' idleness. The Beaufort and Tilden mines, 12 years idle, are being unwatered. The Taylor's total output has been only 32,000 tons, and it only shipped three years. The Beaufort sent out its last ore in 1887, and has shipped 90,000 tons. D. E. W.

Trade Publications.

A System of Engines.—Under this title the Harrisburg Foundry & Machine Works of Harrisburg, Pa., have prepared a handsomely illustrated description of the Harrisburg engines of many types and designs which embody the most advanced features of steam engineering. Their complete scientific system of engines provides a different style of machine for each changed sphere of conditions and service. It also provides a carefully graduated list of sizes for each style maintained in the system. This is done so that there may be no forcing in the selection of a machine for a size too small or too large for the requirements, a mistake which occurs with great carelessness and frequency in common practice because of the meager styles of the engine builder from which to select. In order to comprehend the scope of this system it may be stated that the company have actual patterns and drawings for 22 styles or types of engines designed to meet varying conditions; each of these styles is closely graduated and variously range from 6 to 3000 horse-power capacity, comprising upward of 300 different sizes of drawings and patterns. The system is based upon sound engineering principles as well as commercial advantage. It is believed that its effect will be felt favorably wherever compared with less thoughtful, thorough and superseded practices. Among the engines described and illustrated are the Harrisburg Ideal simple engine, the standard simple engine, standard tandem compound, standard four-valve simple, standard four-valve tandem compound. Harrisburg-Corliss tandem compound, Harrisburg-Corliss cross compound, Ideal simple and tandem compound, heavy duty tandem compound, and others. The description includes handsome engravings showing all the main details together with indicator cards illustrating the operation under varying conditions of load. The matter also includes the Harrisburg-Weitmeyer patented boiler setting, Harrisburg steam road rolls, and so on. The matter is presented in two forms, one in paper covers, the library edition being in leather with untrimmed edges, with the engravings all on heavy calendered paper.

Pipe Threading and Cutting Tools and Machinery.—D. Saunders' Sons of Yonkers, N. Y., have prepared two catalogues dealing with their hand tools for cutting and threading steam and gas pipe and their pipe threading machines. The first covers their wide line of hand tools adapted for easily and readily cutting and threading pipe. The second is devoted to a wide range of machines intended for cutting all sizes of pipe, and are of such varying designs as to meet all requirements. Their No. 4 C machine has standard adjustable expanding die heads and patent lever gripping chuck. The arrangement of the latter is such that the pipe is gripped to loosen by a simple movement of the lever without the necessity of stopping the rotating motion of the gripping chuck, as is the case when the ordinary pipe machine gripping chucks are used. It is apparent that this improvement means a great saving of time. The movement of the gripping jaws is applied through a system of sliding blocks and levers which gives the required motion to the chucking jaws to grip any size pipe within the range, 1 to 4 inches, and provides sufficient leverage to grip each firmly by an easy motion of the lever. The operation of adjusting the jaws to grip the different sizes of pipe is very quickly made. All the gripping jaws are brought to the center by one movement. The jaws are made of tool steel, and can be resharpened by grinding without drawing the temper. The cutting head is arranged on the carriage with a die head on the front, sliding in ways, which allows the die head to be brought close to the gripping chuck. By this means short pieces of pipe can be threaded without the use of a nipple chuck. After the pipe has been threaded and is to be moved to adjust it for cutting off, or for any other reason, the die head is pushed to one side, allowing the pipe ample room to pass from the cutting head without passing through the die head to the injury of the chasers by the pipe sliding over

them, which is the case when the die head is held stationary in the center of the ways of the machine. The cutting off tool is conveniently placed. When the machine is arranged to hold nipples the jaws for gripping the pipe are removed and replaced by jaws to hold the nipples. There is a set for each size nipple of 1 to 4 inches. They can be changed from one size to another very readily and hold either right or left hand.

Portable and Permanent Railways.— Arthur Koppel of Berlin, with New York office at 66 Broad street, has presented a very handsome series of half-tone engravings illustrating his various systems of industrial railway tracks. The first view shows a forest railway with animal traction in Sumatra, and the next shows transport of earth work for the Hamburg-American Packet Company, Germany; next, the handling at Alexandria, Egypt, of 1600 tons of railway material. Then follow views of a representative hauling plant for ore; transport in the gold mines of the South African Republic; railway in the gold mines district, India; railway at the terminal point of the electrical railway at Groenendijk, Netherland; locomotive and goods wagons of a military railroad in Russia; mining installations in Turkey; railways in Porto Rico, Dutch India, the Transvaal and many other countries of the world.

Lubricators.—A large catalogue has been found necessary to describe the wide range of lubricating devices made by the Michigan Lubricator Company of Detroit. Concerning their double, triple and quadruple sight feed cylinder lubricators, it is stated: "A double sight feed lubricator of the ordinary hydrostatic principle will perfectly lubricate two points of one high pressure cylinder of a Corliss engine, but when the lubrication of two points of a low pressure, intermediate or vacuum cylinder is brought into question, the greatly increased viscosity of high class lubricating oils demands the introduction of the atomizing feature, in order to deliver the lubricant to such cylinders in a state to perform its service thoroughly and to prevent the oil being exhausted from the cylinder in almost the state it entered. Therefore our principle of preserving the hydrostatic feature intact for the high pressure cylinder, and compounding with it atomizing feeds for the cylinders having lower pressures, and corresponding lower temperatures, is original with us, and places our lubricators of this class at the head, and we guarantee them as the highest exponents of the art. The lubricators may be mounted either with perpendicular stand, bracket or curved goose neck stand, the two latter styles to screw direct to the lagging of cylinders, and if the steam pipe joins the engine beneath the floor the condense tube may extend down and be tapped into it at constant boiler pressure, in which case the condense pipe should be ½-inch to the point where the condense tube starts from the floor up to the cylinder. An ordinary iron pipe may be used beneath the floor." Several special lubricators of this class are manufactured by them.

American Shipbuilding in 1898-99.

The total output of American shipyards for the fiscal year which ended on Friday has been the largest of any year for the last quarter of a century except 1891. During the past fiscal year the construction of merchant vessels, officially returned, consisted of 1429 vessels of 320,876 tons. Besides these, 22 vessels of foreign construction, aggregating 30,181 gross tons, have been admitted to American registry, of which ten were prizes captured during the war with Spain, four were steamships, aggregating 12,126 tons, admitted by special acts of Congress, and the remainder wrecked vessels, repaired in American shipyards.

Nearly all the new tonnage is built to navigate in the coasting trade reserved to American vessels. The only steamships built directly for the foreign trade were the "Havana" and "Mexico" of the New York and Cuba Mail and the four "Admiral" steamships for Cuba and Jamaica, aggregating 19,750 tons, which were built under the postal subsidy act. In anticipation of legislation at the coming session, however, construction has begun or been contracted for on about 100,000 tons of steel steamships for foreign trade and trade with Hawaii and Porto Rico, involving an expenditure of about $15,000,000.

For the first time in our history, on June 30 the total tonnage of our steam vessels, when tabulated, will exceed the total of all other kinds of documented vessels. During the year, however, 460 sailing vessels of 96,458 tons have been built, compared with 426 of 42,502 tons for the previous year, while the steam vessels built number 478 of 167,851 tons, compared with 448 of 110,128 tons for the previous year. The most notable vessel is doubtless the "John Smeaton," a steel schooner of 5049 gross tons, built at West Superior, Mich., probably the largest fore-and-aft vessel ever built.

For the first time in our history steel has become the principal material in our annual construction of rigged vessels, the steel tonnage for the year being 133,991 tons, wood 130,309 tons. Iron has ceased to be a shipbuilding material, only one vessel of 9 tons having been built of iron.

The additions to our seagoing fleet, including 30,181 tons foreign built referred to, were 166 vessels of 155,987 tons, divided into 50 steam vessels of 75,289 tons, 74 schooners of 62,906 tons, 10 square rigged vessels of 12,428 tons and 32 yachts of 5364 tons, including the new cup defender. The square rigged vessels are mainly for the foreign trade, and the schooners for coasting purposes or the trade with the British provinces and the West Indies.

The New York Machinery Market.

Office of *The Iron Age*, 232-238 William street, New York, July 5, 1899.

For weeks machinery merchants in this section have been resting on their oars. Orders which were pressed upon them were accepted in rather independent fashion, and then the merchant and builder "had it out" regarding delivery. The running out of new business has for some time been very lax, but the last week was simply declared an "off week." There was without doubt less business consummated on Liberty street during the week under review than during any other week throughout the last year. On each of the two days when merchants were ostensibly at work things were reported to be in almost an absolute condition of stagnation. There is, of course, quite a likelihood of additional quiet days before the summer season is ended. It is confidently expected in certain quarters that the ensuing week will open up with a little boom, and other merchants claim to have evidence of a nice amount of new business.

There are whisperings of several prospective deals of good size, but no one seems to be sure enough of their ground to divulge anything specific.

Work is progressing very nicely toward the completion of the final details in the formation of the Niles-Bement-Pond Company. The fact that plants of the four companies which are being merged into this new concern are located in three States involves considerable work in getting legal matters into shape. This is being attended to by Gordon T. Hughes of this city. Mr. Hughes hopes to have all details arranged and the charter of the company filed by August 1. The organization will then also be formally completed. Gossip in the street puts it that the Bement brothers intend to retire from the business entirely, although it is said that Clarence Bement will be included in the Board of Directors. It is also rumored that Mr. Miles has expressed a desire to retire from the business. It is unofficially stated that the new company will continue selling the Bement-Miles tools in Europe through the present agencies.

Contracts have not been awarded as yet for the boilers and engines for which the Manhattan Railway Company have specified. The proposals have been received and the engineers of the road were in consultation last week with Superintendent Baker over the various plans and proposals submitted by the bidders. It is said that specifications are being prepared for other material requisite in the construction of a mammoth power station. A. F. Nagel, who was associated with Superintendent Baker in the construction and electrical equipment of the "Alley L" in Chicago, is associated with the Manhattan Company now in the capacity of mechanical superintendent. He is now located in the company's offices, 32 Park place.

The Kennedy Valve Mfg. Company, whose works are at Coxsackie, N. Y., write us as follows: "We are putting an extension on our foundry wing, 25 x 75 feet, and putting up a new building, 45 x 100, two stories, for offices, storeroom and shops, and increasing our power plant by addition of a 125 horse-power engine. Regarding machinery, we have ordered and are at present installing special improved machinery for our class of work, such as molding machines, lathes, &c. We have also just installed a 25 horse-power air compressor, as we have a 5-ton pneumatic traveling crane and several air hoists, pneumatic chipping tools, hammers, &c."

T. Maxfield, New York representative of the Buffalo Forge Company, has just returned from a visit to the works at Buffalo. He reports the factory completely choked with work, and says that in consequence of this condition night and day shifts are running, keeping the plant in operation 24 hours a day. The various buildings are all being extended as much as possible, and every effort is being made to increase the capacity of the plant. A large order for machine tools has just been placed by this company for equipping an extension, 100 x 100 feet, which is being erected now. Orders are constantly being placed for machine tools, especially when a tool can be had for spot or nearby delivery.

The Chicago and Northwest Machinery Market.

Office of *The Iron Age*, 805 Fisher Building, CHICAGO, July 1, 1899.

The machinery trade has never been in better shape than at present. Shops of all kinds are crowded with work, while inquiries continue to pour in for all kinds of appliances, whether for generating, transmitting or utilizing power. A much larger proportion of the inquiries than usual eventuates in orders. The demand for heavy machinery, including large engines, is particularly strong. Establishments fitted for such work have their capacity covered many months ahead, but this does not deter fresh orders from being placed, even if deliveries are dated far into the future. Advancing prices, caused by the higher cost of materials and higher wages, are cited as influencing some buyers to withhold orders in the hope of a reaction setting in, but so many others are either confident of a continued rise in prices or are driven to purchase on account of their necessities that the volume of business enlarges instead of decreasing. General conditions are so good that quietness in some special branches has no effect on the grand aggregate. Thus, in the bicycle trade, the negotiations for consolidating a number of the large manufacturers have postponed orders for machinery expected to be out by this time, but the absence of these orders is not missed seriously. In some quarters a stimulant to trade is observed in the purchase of equipment for beet sugar factories, which are being established in a number of Western States.

The machine tool trade has latterly shown much improvement. June opened with business lagging, comparatively speaking, although better than the corresponding period of last year. Higher prices were believed to be adversely affecting trade, and the usual summer dullness was also supposed to be setting in rather early. But a revival set in the last half of the month, and now more inquiries are on file than at any previous time. The railroad demand has greatly increased, while shops generally are adding to their equipment. Less hesitation is observed in paying advanced prices than when the upward movement began, and a particularly strong disposition is noted to buy improved tools for getting out work at lower cost even though they are of an expensive character.

Power transmission appliances are in active demand, and all makers are crowded with business. Probably never before was trade so lively in this branch. Machinists' and mill supplies are moving freely, prominent dealers reporting no cessation in the continuous draft upon their stocks.

The Edward P. Allis Company, Milwaukee, Wis., continue very busy. During the past month they have booked orders from the Riverside Iron Works, Wheeling, W. Va., for two steeple compound blowing engines with 84-inch air cylinders, and for three of the same engines from the Pennsylvania Steel Company, Steelton, Pa., the Pittsburgh and Birmingham Traction Company, Pittsburgh, have ordered a 30 and 48 x 48 cross compound direct coupled engine. The Cochita Gold Mining Company, New Mexico, have ordered a 1000 horse-power direct coupled engine. The American Steel & Wire Company, for their mill at Worcester, Mass., have ordered a 44 x 60 reversing engine. In June the company shipped to the Carnegie Steel Company two new blowing engines for their Duquesne works. These are very large cross compound machines, with air cylinders 100 inches in diameter. The demand for the Allis Company's machinery continues unprecedented. Orders during the past month for engines averaged more than one a day.

Joseph T. Ryerson & Son, Chicago, have a machinery trade which is confined principally to boiler makers' and sheet metal workers' tools, such as rolls, punches, shears and pneumatic machinery. The demand for these tools for the last six months has been fair, but it is the belief of the firm that the advanced prices have curtailed to a certain extent the purchase of new machinery, as many are hoping against hope that the present high values will be somewhat reduced in the near future, and at that time any new equipment can be put in at a more reasonable cost. One of the most serious difficulties of the situation is that it is impossible to secure delivery on nine out of every ten orders in less than four to six months.

The Whiting Foundry Equipment Company, Harvey, Ill., found business for the month of June very heavy. There seems to be some talk of people postponing buying on account of advance in price, but the absolute requirements make business lively. Business is coming from old established concerns mostly, but the company have figured on a great many foundry equipments for new concerns, and expect to secure some of them. They have received an order from the McCormick Harvesting Machine Company, Chicago, for four No. 9 cupolas, 18 tons per hour capacity each. Adding the two No. 9's which were sold them previously, they will have a total of six No. 9 Whitings. Shipments for June were heavier than any previous month in the history of this firm.

Among a number of orders recently placed through A. Sorge, Jr., & Co., Chicago, with the Harrison Safety Boiler Works of Philadelphia for Cochrane feed-water heaters, are the following large units: Two of 5000 horse-power and three of 4000 horse-power, each for the Illinois Steel Company, South Chicago; one of 4000 horse-power for the Deering Harvester Company, one of the 4000 horse-power for the Commonwealth Electric Company, and one of 3000 horse-power and one of 2000 horse-power for the McCormick Harvesting Machine Company, all of Chicago. Beside these large units the firm report a considerable number of orders for smaller sizes.

Perry Ranson, manufacturer of Vulcan grinding and polishing machinery, Oshkosh, Wis., says that the demand for his regular line of grinding and polishing machinery has not been so brisk during the past month, although having considerable sale for his new disk grinders. Most of the orders on hand at the present time are from old established concerns. Making a comparison of business for the first half of this year with the first half of last year, he finds that it is probably 20 per cent. better than last. He is experiencing considerable delay in securing raw material of almost every description, and could make more sales if he had goods ready for immediate shipment. He does not think that the slight advance in price of machinery has interfered with its sale.

The Standard Pneumatic Tool Company, Chicago, transacted an unprecedented amount of business during the month of June, orders having been mostly received from old established concerns, railroads especially. The only difficulty they have experienced has been in obtaining raw material required in the manufacture of their machines in adequate quantities. They have received during the past month orders for 40 new Little Giant pneumatic hammers and 50 Little Giant pneumatic drills from Dusseldorf, Germany; 20 hammers and 60 drills from St. Petersburg, Russia; 18 hammers and 32 drills from London, England; five hammers and ten drills from Johannesburg, South Africa Republic; seven hammers and 12 drills from Stockholm, Sweden, as well as smaller orders from Scotland, Canada, Mexico, France, Finland and Italy. The domestic trade has also surpassed their most sanguine expectations.

Williams, White & Co., Moline, Ill., do not observe any slackening up of orders at the present time on account of the advance in prices. They do not notice any particular activity in the starting of new enterprises, their orders coming from old firms. Their business for the first half of the present year very much exceeds that of the first half of last year. They do not have any trouble in getting raw material, as they put in some good sized contracts for pig iron and steel early last winter. They find special activity just now in inquiries for machinery for making metal wheels. They make a complete line of machinery for manufacturing metal wheels for agricultural implement and similar concerns. They recently received an order for several of their special machines from Australia, and are furnishing quite a large number of Yeakley hammers to the manufacturers of steel axles.

The Battle Creek Steam Pump Company, Battle Creek, Mich., found the June demand far in excess of their ability to supply. They have not observed any slacking up in orders on account of advance in prices. They perceive a noticeable activity in starting new enterprises, as a fair percentage of their business is being done with new concerns. The volume of business for the first half of this year is about 25 per cent. larger than the first half of last year. They have found a scarcity in the supply of pig iron, but aside from this have not been bothered in having orders for raw materials filled. Among the sales recently made are all the pumps for the new beet sugar factories at Bay City, Rochester, Alma and Kalamazoo, Mich., besides furnishing additional pumps for beet sugar factories already in operation. The foreign demand for Marsh pumps has gradually increased to a point where they are now exporting about half of their product.

The Gates Iron Works, Chicago, observe that, instead of showing any slackening up on account of high prices, the number and size of orders are constantly increasing. The volume of accepted orders for the first half of this year exceeds by 33 1-3 per cent that of last year and is

only limited by their capacity. They have not experienced in particular any scarcity in the supply of raw material, but the rapidly advancing prices have made it very difficult for them to advance the prices of their finished product as rapidly as they should, and they are constantly obliged to revise estimates that were sent out, even those of a month ago. It appears to them that a very prosperous year has set in for all manufacturers in their line and they see no reason why it should not continue indefinitely.

Wickes Brothers, Saginaw, Mich., say that their business in June was better than in any previous month, and as each month for nearly a year back has been better than its predecessor, this would indicate that people are not afraid to any great extent of the high prices now prevailing. About the usual proportion of orders is coming from old established concerns and from new institutions. A very large part of their trade is with the saw mills, not only in Michigan, but throughout the Southern and Western States. They know of no new enterprises in this line in the far West, but there quite a large number in the South. They are furnishing the equipment for a very large saw mill in Alabama, and have orders for other saw mill machinery that will keep them running for months to come. The trade in boiler shop tools is at present rather light. In April and May they had quite a large number of good sized orders and are now just cleaning these up. In the boiler line the demand is very active and prices, of course, are ruling high. They are now able to take little new business in this line, as orders secured two or three months ago will keep them running for a long time to come. They are building a new boiler shop, which will have about three times the capacity of the old one and which will be equipped with the latest and best tools and appurtenances, orders for which have been placed. They find that nearly every one is prepared for the advances in prices, and as they are making plenty of money themselves they do not object to paying "the other fellow" a good round price.

The Wm. Bayley & Sons Company, Milwaukee, Wis., have just completed a heating plant in the new factory of the Fosdick & Halloway Machine Tool Company, Cincinnati; also one for Saunders & Eisswein, Columbus, Ohio, in the deaf and dumb school, and a drying system for the New Process Raw Hide Company, Syracuse, N. Y. They report a growing demand for their heating apparatus, having equipped a number of the largest foundries and machine shops with their improved system for heating large buildings.

Stover Mfg. Company, Freeport, Ill., find the demand for their line of goods very strong and on the increase, coming largely from their established line of agencies. The recent advance in price has had no effect upon the demand either one way or the other. The first half of this year shows a very marked increase in the volume of business over the corresponding period of last year, with the factory considerably behind immediate orders. The fall trade promises to be the largest they have ever experienced and their factory will be kept running to its utmost capacity to meet this demand.

The J. Thompson & Sons Mfg. Company, Beloit, Wis., say that the volume of business with them the first half of the present year has been considerably larger than the first half of 1898. They are at present receiving a great many orders for their Lewis gasoline engine and have been especially successful in securing nice water works jobs. A few days ago they received an order for one 25 horse-power Lewis engine, to go into the new water works plant at Hartford, Mich.; also an order for an engine for the water works plant at Nora Springs, Iowa. They are now building the Lewis engine for direct connection to electric dynamos. This has been considered a very difficult matter, but they are pleased to say that they have accomplished good results with their engine.

The Kempsmith Machine Tool Company, Milwaukee, Wis., say that the month just closing has produced the largest volume of business in their history and they have many months' work ahead. They are just beginning to settle in the new addition to their factory and expect to be fully organized in it very shortly, when they hope to be able to keep pace with the constantly increasing demand for their tools. The export trade keeps up well with them and they see no other indications at present than for an increased volume of business from that source. They are somewhat concerned about the continued advances in prices of material used in their tools, as the increased prices of finished product have not kept pace.

The Walburn-Swenson Company, Chicago, say that business continues just as brisk as it has been for the last six months. There seems to be no slackening of the demand for machinery in their specialties, particularly evaporating machinery, &c., for packing houses, fertilizer works and extract works. Most of the inquiries appear to come from people who are enlarging their capacity rather than from new enterprises. The prospect for business for the latter half of the year is very good.

The Union Steam Pump Company, Battle Creek, Mich., say that foreign shipments do not fall off, the home trade is good and specifications for future delivery continue to come in. They are running full force overtime and adding new buildings and shop equipment constantly. The general advance in prices seems to have influenced the change in the classification of freight rates, which will sooner or later have its detrimental effect, and the upward movement will eventually have its influence in curtailment in all directions. Already the conservative element is hedging against panic and hard times, which are likely to follow, but their business is of such a nature that they scarcely believe it will be subject to detrimental changes in the future.

The Charles F. Elmes Engineering Works, Chicago, report the demand for machinery still very good, although they have had some cases in which parties have given up building, thinking that prices might be lower the latter part of the year. Orders have been principally from new concerns, although having considerable business from old established concerns. They have been exceptionally busy for the past 18 months, having run their plant night and day part of that time.

The Nordberg Mfg. Company, Milwaukee, Wis., say that the demand for steam engines, air compressors, pumping engines and other machinery of that class is very good. There is no noticeable slacking up on account of advance in prices. There is considerable activity in starting new enterprises, but at the same time a great many orders are coming in from old established concerns. The volume of business done by them the first half of this year is more than twice what they did the first half of last year. Raw material is scarce and it is difficult to get good foundry iron. They have received orders for several air compressors, and natural gas compressors of large size recently, among which are two pairs of compressors for the Carnegie Natural Gas Company, each of nearly 1400 horse-power, a 500 horse-power air compressor for Bunker Hill & Sullivan Mining Company, a 300 horse-power compressor for the Isle Royale Copper Company, a 100 horse-power electrically driven compressor for De La Mar's Mercur Mine in Utah and also a great number of orders for regular Corliss engines, simple and compound. They also received orders for five hoisting engines, with cylinders 32 inches in diameter by 72 inches stroke, for the Osceola and Arcadian copper mines, Lake Superior; also for several special engines for the same mines. They have lately started a hoisting engine at the No. 5 shaft of the Tamarack mine, which shaft will be sunk to the depth of 6000 feet. The engine is of a new design and is probably the largest of its type in the world. It started off without a hitch and has been in successful operation for nearly a month.

Manning, Maxwell & Moore, machine tools, Chicago, are greatly encouraged by the recent increase in business and believe that the summer months will not this year be as quiet as usual in other years. They have secured some very fine orders in the past two weeks, which swell June business to exceed that of May. Many inquiries are being received for large tools from railroads and other users of heavy machinery, but an especially strong demand is found for tools of medium grade. Considerable business is being lost from inability to make deliveries. Prices of tools are still advancing.

The Steel Ball Company expect to remove their factory soon from 37 West Randolph street to Austin and Claremont avenues, Chicago. They are building a factory for their own exclusive purposes, 120 feet square, one and two stories high, and will equip it with a 450 horse-power engine and machines to turn out about 1,200,000 balls daily. They have been making bicycle balls mainly, but a heavy demand is growing for balls for miscellaneous machinery, and they will add machines as fast as trade warrants for turning out larger balls up to 4 inches in diameter, absolutely spherical. The new factory is to be ready for occupancy by August 1. In the meantime they are driving their present factory to its full capacity on orders.

S. F. Hodge & Co., Riverside Iron Works, Detroit, Mich., have just turned out an engine in a remarkably short time. It is a vertical cross compound Corliss, 24 and 50 inches by 42-inch stroke, to develop 1200 horsepower, and is intended for a grain elevator in Duluth. The work was begun May 1 and completed June 17, although the patterns had to be made specially. It is stated to be the first engine of the kind built in Detroit.

McDowell, Stocker & Co., machine tools, Chicago, have had a good month's trade, showing a great improvement over May, especially in the last half of the month. They sold a fine outfit of tools to the Leland & Falconer Mfg. Company, Detroit, and made another notable sale to Geiger & Fisk, Louisville, the latter including an 11-ton lathe. They have lately greatly increased their previously large stock, having been obliged

to rent another wareroom to accommodate it. Their stock is now larger than ever before.

The Pearson Machine Company, Chicago, report June business fair, although this is usually their dull season. Considerable trade with bicycle manufacturers is deferred until negotiations are concluded for the consolidation now under consideration. They take much pride in the fact that they have received a second order from the Ingersoll-Sergeant Drill Company Easton, Pa., for machinery to make feed nuts for rock drills. They furnished the first plant last year, which proved so satisfactory that the second order has followed. The new plant will make 2¾-inch nuts for a larger drill which is to be brought out, the nuts on the old drills being 2¼ inches.

The Vilter Mfg. Company, Milwaukee, Wis., builders of refrigerating and ice making machinery, Corliss engines, &c., have recently closed the following noteworthy contracts: For a 200-ton refrigerating machine, fourth order, Shwarzschild & Sulzberger Company, packers, New York; 150-ton, Merchants' Ice Company, Norristown, Pa.; 50-ton. Standard Malt & Hop Brewing Company, Guttenburg, N. J., and Anderton Brewing Company, Beaver Falls, Pa.; 40-ton and 20-ton, Columbus Brewing Company, Columbus, Ohio; 40-ton, Elk Brewing Company, second order, Kittanning, Pa., Deere & Co., Moline, Ill., Burckhardt's Brewery, Akron, Ohio, and Twin City Ice & Cold Storage Company, Champaign, Ill.; 35-ton, Ramirez y Zepeda, packers, Mexico; 20-ton, Austin City Ice Company, Austin, Tex., and John Blankenbuhler, Zanesville, Ohio; 15-ton, People's Ice Company, Shenandoah, Pa., and Schmauss Company, Rockford, Ill.; 10-ton, Clarinda Poultry, Butter & Egg Company, Clarinda, Iowa, and National Biscuit Company, with 2-ton ice plant, Cambridgeport, Mass.; 4-ton, Cadwell & Swatling, Willcox, Ariz., with 1½-ton ice plant. Also the following Corliss engines: 26 x 48, J. E. Botsford, Port Huron, Mich.; 24 x 48, Crane Company, Chicago; 18 x 42, Valley Iron Works, Williamsport, Pa., and Romadka Bros., Milwaukee; 15 x 36, Beaver Dam Malleable Iron Company, Beaver Dam, Wis.; 14 x 36, M. B. Helmer, Fond du Lac, Wis.

J. B. Doan & Co., machine tools, Chicago, find their June trade not quite so good as previous months, but an improvement was observed in the latter part of the month. An interesting episode in their June trade was the sale of an outfit for a shop in Mexico, which is a little out of the ordinary for a Chicago dealer. This is for a general repair shop which will do all kinds of work. They report prices of machinery steadily advancing. Manufacturers are still behind on deliveries, showing that they are crowded with work. The greatest demand now observed is for heavy tools. Customers are not finding so much fault with advancing prices, for they are becoming accustomed to changed conditions and are also getting better prices for their own products.

Chas. H. Besly & Co., Chicago, have seen no slacking up of their trade since the beginning of the year. Their orders are coming from all over the country and from foreign countries. They are now filling an order for India. They have been running their tap factory full force all this year and have not been able to keep up with their orders, being too far behind for comfort most of the time. They have also had a good demand for their Gardner grinders and have just shipped two to the Navy Department. They note a heavy demand for machinists' tools and mill supplies, but have had a particularly good trade in Helmet oil, which is used more largely at this time of the year than at others. The new catalogue recently issued by this house has attracted much attention and is credited with bringing a great deal of business.

The Marshall & Huschardt Machinery Company, machine tools, Chicago, have more large inquiries now on their books than at any previous time in their history. These are for extensive outfits. Two are from old concerns who are considering the manufacture of their own goods because they are unable to get satisfactory deliveries from outside establishments. Others are enlargements of existing plants, except one, which is a wholly new concern. They are naturally pleased with the outlook for new business, although expecting the summer months to bring a comparatively quiet condition of trade. Their stock is now increasing, as manufacturers are beginning to get the benefit of their enlarged forces of production. They have had two advances in prices the past week, both of them on planers.

Pawling & Harnischfeger, Milwaukee, Wis., cannot see that the advance in prices of materials in any way affected the demand for machinery in their line. Their orders for June have been fully up to the average for the past six months and inquiries coming in seem to indicate no slackening of the demand. While they are receiving a great many orders from new enterprises which are being started, by far the greater proportion of the orders is coming from old established concerns who are enlarging or improving their plants. Their sales for the first six months of 1899 have amounted to more than three times the amount of sales for the corresponding period of 1898. A recent order of special interest is one from the Midvale Steel Company of Philadelphia for one electric traveling crane of 150 tons capacity, which, it is believed, will be the largest crane in the country. There are other 150-ton cranes using two 75-ton trolleys, but this crane will have one 150-ton main trolley with a test load of 200 tons and an auxiliary trolley of 25 tons capacity. They also have an order from the same company for a 75-ton electric traveler with 15-ton auxiliary. Among other orders booked in June are three electric travelers for the Chicago & Northwestern Railway Company; one for A. L. Ide & Son, Springfield, Ill.; one for the Commonwealth Electric Company, Chicago, Ill.; one for the Norwalk Iron Works, Norwalk, Conn.; also a large amount of smaller work, consisting of one and two motor electric hoists and standard hand travelers.

Hill, Clarke & Co., machine tools, Chicago, report a remarkable improvement in trade in the latter half of June, as compared with a somewhat slow trade in the earlier part. They have sold some good outfits, notably to railroad shops. They find a brisk demand for heavy tools. Large planers have been sought here by buyers from Cincinnati, showing the scarcity in that great machinery center. Deliveries of tools are now being received on orders placed months since and their stock is fast getting into better shape. They find improved tools, which turn out work at a reduced cost, being readily taken, notwithstanding the high price asked.

Geo. D. Walcott & Son, Jackson, Mich., are shipping machine tools to England and Italy. They began to do a foreign business about two years ago, and now a large part of their trade comes from transatlantic customers.

A very important Western machinery company, whose name is withheld for special reasons, say that the demand for their product is very sharp and advancing prices have not checked it. Orders are coming in freely from old established concerns as well as from new enterprises. A larger proportion of inquiries results in orders than has usually been the case. They do not mean by this that they are taking orders more freely in proportion to other builders of the same class of machinery, but learn that a larger portion than usual of the machinery inquiried for is purchased, if not from them from somebody else. The volume of business booked for the first half of this year greatly exceeds that for the first half of last year. Their output has not been much larger, for their capacity has been no greater, and they were very busy last year. They are, however, nearly doubling the capacity of their works and expect to make a corresponding output during the last half of this year. The most noticeable feature of current trade in their line of work and in kindred lines is the extreme willingness of builders of machinery to name prices on machines for delivery a long time ahead, when the manufacturers of the material which enters into the construction of such machines absolutely decline to quote. Orders are being accepted for all kinds of machinery to be delivered on dates which the sellers evidently have very little if any prospect of meeting. They are banking largely on the buyers not being ready for the machines at the date stated for delivery. In a large majority of cases they will be perfectly safe in this, but for fitting up old shops prompt deliveries must be given. The manufacturers of what is raw material for machine tool builders decline to quote when their raw material is not only contracted for, but in many cases actually on hand, and where the question of labor has been settled with them. They know absolutely what their product will cost them, but they decline to name prices now, for fear they will not be as high as might be obtained later. Yet manufacturers of highly finished machinery who cannot have all their requirements covered on account of the special character of much of the material are naming prices without hesitation when it is absolutely impossible for them to know what the cost of their product will be.

Boston has its own troubles in the way of unsatisfactory and insecure building conditions. A commission appointed by the Mayor of Boston to investigate the city Building Department has just made its report, which is in effect a severe criticism of the department and an *exposé* of very serious conditions existing in some of the leading hotels and department houses of the city, especially in respect of protection against fire. The commissioners say that many buildings of five or more stories, the upper floors of which are occupied by operatives, mostly women, are absolutely without means of escape in case of fire. They recommend the removal of the present Building Commissioner, on the ground of culpable neglect and inefficiency; that building inspectors should have technical knowledge; that one or more engineers be employed by the department in addition to a deputy commissioner engineer, and that greater power be given to forbid the continuance of work in violation of the building law.

HARDWARE.

Condition of Trade.

THE first half of the year has closed with a record of exceptionally prosperous and profitable business for most manufacturers and wholesale merchants, with an improved state of things for retail merchants generally. It will doubtless long be memorable for the rapid advances in prices and the extraordinary activity in the organization of trusts or consolidations of one kind or another, as well as for the activity which has characterized the market as the result in some measure of the influence of these movements, together with a return of prosperity to the country generally. Something of a lull in trade was caused by the national holiday, especially as Monday was also very generally observed, and by the beginning of the vacation season, which brings with it something of a respite from the exceptional activities of the past few months. Manufacturers are shutting down for repairs where the pressure of orders will permit, and some large plants are curtailing their production or stopping altogether, even though it involves delay in making shipments of products which are needed by the trade. The tone of the market continues strong and the upward tendency is regretted by many who think that the danger line is not far off, if it has not been already reached. The high prices developed in many lines will doubtless tend to diminish consumption, and when this is the case, with the popular feeling which is apparently developing antagonistic to so-called trusts, it will be a feature of the situation that must be recognized by prudent merchants. Meanwhile general conditions continue eminently satisfactory and the market is characterized by an exceedingly confident tone.

Chicago.

Shelf Hardware jobbers continue to enjoy an active trade. Packing forces at the local jobbing houses have been obliged to work at night part of the past week, which is something unprecedented at this time of the year. Many changes are being made in prices, July 1 being the date on which new price-lists are issued for six months by prominent Hardware manufacturers. Advances are frequent, but in sundry instances prices have been wholly withdrawn to await something like steadiness in the cost of raw material. Jobbers, however, are troubled less by changes in prices than by the difficulty in securing deliveries of goods which are badly needed to fill orders. The scarcity of goods is becoming an old story, but it is by no means losing its force in keeping the volume of business below what it should be under the circumstances. It is expected that some falling off will occur this week owing to the holiday season, as traveling salesmen and retail merchants are inclined at this time to take some little recreation and drop the cares of business for a few days.

St. Louis.

Harvesting and the annual vacations both show temporary effects on the trade. The business of the past six months certainly warrants a brief rest to officers and employees of jobbing houses, and it ought to be given as a regularity to all workers. Transactions this month will probably determine the character of the trade for the balance of 1899, and the outcome is looked upon with interest. Fall buying continues right along and wants of this nature are being covered more freely than in time past. Goods are getting scarcer, especially in Iron and Steel products, and the question to solve is not so much in the selling as in the gathering in of stock to fill orders. Tinned Plate, which is sadly short of supply, promises to have stocks still further shortened on account of the wage question. Mills were several months behind before the labor issue was raised and this further embarrasses shipments. Sellers of Tinned Plate are not in great evidence, and those who have some on hand find no temptation in large orders. Business in Stamped Goods has been quieter, and a disposition is seen to ease up a little as the warmer weather comes in. No. 27 Black Sheets are selling at 3.30c. from stock and a discount of 65 and 10 per cent. is named on Galvanized. Stock sizes are being shipped more promptly from mills. A brief lull in new orders will give makers and jobbers of all lines of Hardware time to catch up. Southern trade continues to hold up well and collections are good. Extremely low prices, however, are being paid for cotton, and the ruling figure is now about 4c. per pound, with some sales reported at 3½c. The section of Texas visited by storms has suffered material damage, accompanied with loss of life. Private advices so far received indicate crops as totally destroyed, but it is hoped that something will be saved. A new and uniform list on Vehicle Wheels has been adopted, and radical advances made in price. Jobbers have been obliged to follow the market and find the trade in line to receive the new quotations. Horse Nails are in good demand, and some makers have advanced their prices.

Cleveland.

THE W. BINGHAM COMPANY.—This is the commencement of the vacation season and trade has already begun to fall off, although the month of June kept well up in line with the preceding months of the year. Formerly trade began to lag about the 15th, but this year it has kept right up throughout the entire month, and only shows signs of falling off now as salesmen begin to drop out upon their annual vacations.

Prices continue to advance and general Hardware feels more and more the effects of high prices upon raw material. We are not so sanguine as some of a decline after the first of the year. We do not look for it so soon, as we hear each day of orders for pig iron being placed later and later into next year at present prices, which are 100 per cent. higher than a year ago.

Building material is in great demand here and it is almost impossible to get some lines. This argues well for a good trade in Builders' Hardware and Mechanics' Tools. The question is often asked if "building is not being overdone here," but when one stops to think that the natural increase of the city is now over 15,000 inhabitants per year, the question is easily answered.

Louisville.

W. B. BELKNAP & CO.—The market continues steady, with a large demand for actual consumption. Many old contracts expired, however, with June, which crowded specifications toward the last, and it will be interesting to see how freely buyers will take hold for future contracts at the new full market prices. We think there may be something of a lull, which, however, will be welcomed by the mills, we are sure, to enable them to clean up some of their very old back orders.

Prospects for crops are good; the railroad earnings are unprecedented; business altogether has a momentum which no amount of outgoing gold or political turmoil apparently can stay. Old lines of party cleavage are being broken up at every convention but others at various and unexpected angles are splitting their way.

The anti-trust cry seems to be a convenient one for any candidate to lay hold of, from a Cabinet Secretary down. We think that it will have to be made a little more definite to be of any great effect. Meanwhile the stock market continues to reflect the public's estimate of their worth.

San Francisco.

MILLER, SLOSS & SCOTT.—The demand for Hardware and staples has been very good for the year so far. In many lines there has been quite a shortage, owing to the factories being so slow in filling orders. Notwithstanding the large advance in prices the trade is very active in Nails, Barb Wire and heavy staples.

Our trade with newly acquired possessions in the Pacific is assuming larger proportions than was anticipated, and many lines of Hardware are now being introduced through the medium of the Pacific Coast jobbers.

The Pacific Coast Hardware and Metal Association has just adjourned after having a four-day session at Castle Crag, during which time many things of interest to the coast were discussed.

Omaha.

LEE-GLASS-ANDREESEN HARDWARE COMPANY.—The demand for all kinds of seasonable Hardware is far in excess of what it was a year ago, and trade in general may be summed up as being in a very healthy condition. Values continue very firm, with numerous changes on the side of stronger prices. Weather conditions as a whole have been very favorable to the ripening crops, and no complaints of any kind are heard from the farming community.

The recent heavy advances in prices, brought about mostly by combinations controlling the raw material, will soon begin to be felt by consumers. It is known that the heavy demand for all kinds of material has stimulated consolidated producers of the raw material to curtail instead of increasing their production. This is a smooth move, and has had its effect in forcing prices upward to a point that everybody now recognizes as speculative, although the cause is given out as an excessive demand entirely out of proportion to the supply. Should the upward movement in prices be continued much longer a point is certain to be reached when consumers will materially curtail their purchases. That this has not already occurred is manifestly due to the very favorable business conditions prevailing in all parts of the country, which have materially enlarged the purchasing power of consumers. There is a limit, however, to this, and the prudent business man will be found watching the situation with more than ordinary care and not without some misgivings.

Portland, Oregon.

CORBETT, FAILING & ROBERTSON.—From a jobber's point of view the first half of 1899 goes out in a blaze of glory. It is years since we have seen the profit made in staple goods that the advancing market has enabled us to make during the past six months. Let the good work go bravely on for the next six months and the coming of the new century take care of itself. We know too well from past experience that the reaction bound to come will absorb many of the good dollars earned in 1899.

The meeting of the National Hardware Association next fall at Pittsburgh should bring together the best natured and best groomed lot of Hardwaremen that ever assembled together, if prosperous business tends to develop these qualities.

The outlook for our section at present shows an improvement over the condition promised three months ago. Unless some serious misfortune overtakes our growing crops we should have an average one, which we were doubtful of a short time ago. With good crops, fair prices, our mining and lumbering interests in flourishing condition, the Pacific Northwest should enjoy a happy Thanksgiving next November.

Baltimore.

CARLIN & FULTON.—One year ago to-day we were, as a nation, rejoicing over the greatest naval victory of modern times, while to-day we in the Hardware trade are just as happy over the changed conditions of trade, by which we are relieved from the monotonous experience of many years in seeing every dollar's worth of goods bought one month decline in value the next. It had been for a long time most discouraging, for good judgment in buying availed nothing; costs never entered into the selling price of goods; overproduction, lack of confidence, bitter competition were the factors which depressed values and absorbed profits. This state of affairs affected not merely the manufacturer but applied to both the wholesale merchant as well as the retailer.

Now we see a decided change. Gentlemen's agreements and verbal contracts between manufacturers were not strong enough for weak human nature; combinations and pools were often short lived and were dissolved through internal dissensions, and it remained for the promoter, aided by the immense capital of an investing public, to consolidate and amalgamate into one corporation interests which had warred with each other to destruction. The result is to be seen in those immense consolidations or corporations which now control, in most lines of goods, the entire productive capacity of this country, and being now practically monopolies, fix the market values of goods to suit themselves.

As stated before, we are pleased to know that what goods are in our warehouses are not declining in value, but if what we sell to-day cannot be replaced to-morrow, except at an advance, our hilarity is apt to be but temporary, and our regret is then that we had not followed the market. Contracts are not so elastic that they can be stretched indefinitely; capital puts a limit to the ability of any house to provide for the wants of prosperity; the firm which thinks it a smart thing to unload its little stock of goods because there is a profit over original cost finds its error when it enters the market again, which it must do if it continues in business. For these reasons the prudent merchant bases his selling prices on market values, realizing that when a decline occurs his customer's sympathy does not extend to paying him a profit on invoiced costs, but considers then only the market price.

There has been considerable discussion over the change of terms in some of the heavy staples, from 60 days to 30 days, and the abolishing of a cash discount. The argument has been made that the manufacturers could not afford to pay so much for money as the result of a 2 per cent. ten day discount. In reply to this, no one ever supposed that any corporation was borrowing money at that rate; if so, other lines of goods, such as notions, dry goods, hats and caps, in which the cash discount is as much as 6 per cent., must consider their customers as Shylocks. There are three elements in a cash discount, even in the small one of 2 per cent. It considers the worth of the money where the due date is anticipated; it considers the average risk of an open account which attaches to every credit, and it also considers cost and selling price of the article sold.

In the agricultural sections, where cash is not abundant and the crops will not mature any earlier because the terms on Barb Wire are changed, a shortening of credits is apt to be more keenly felt than in the mining or manufacturing districts, where labor is paid weekly and money goes into circulation at once.

There is another point which should have the consideration of the trade, which is this: The guarantee for a definite period of the price arbitrarily fixed by any monopoly. This we could hardly ask or expect on an open market, when the selling price for one firm's goods was generally fixed by his competitor, but when there is

no competition and values are arbitrarily raised to a high figure the trade should feel that a reasonable time would be given the buyer to dispose of his stock before any reduction is made in price, or if made before such time, then he would not suffer from a change in price over which he has no control. We think this would be an advantage to both buyer and seller.

New Orleans.

A. BALDWIN & Co.—Business shows considerable improvement during the past 30 days, and has exceeded our expectations considerably, as at this season of the year it is somewhat quiet.

Although orders are not very large they are plentiful enough to make a very satisfactory average. There is a slow but steady improvement in the general situation, and the unsatisfactory condition of the farming section early in the season has changed with the warm weather, and the continued improvement in the crop situation has been very beneficial to business.

Notes on Prices.

Wire Nails.—A satisfactory volume of business has been entered up by Wire Nail manufacturers for the next 30 days. The demand for immediate delivery during the past month has shown a healthy condition in trade. Manufacturers' former quotations remain unchanged, as follows, f.o.b. Pittsburgh:

To jobbers in carload lots	$2.35
To " in less than carload lots	2 37½
To retailers in carload lots	2.45
To " in less than carload lots	2.55

New York.—The trade tributary to New York are ordering Wire Nails according to the pressure of their requirements, without any attempts to anticipate their wants. Quotations continue as follows:

To retailers, carloads on dock	$2.55 to $2.60
To " less than carloads on dock	2.75
Small lots from store	2.75 to 2.85

Chicago.—Manufacturers have been favored with a continuance of good trade. They have not advanced prices, thus disappointing those who expected to see an advance on the 1st inst. The only change taking place now is the adoption of the new terms, which are net cash in 30 days. Jobbers here have not made the same change in their terms, but will continue to let their customers purchase at 60 days, with 2 off for cash in ten days. Quotations are continued at $2.60, Chicago, in single carload lots and $2.70 for small lots from stock.

St. Louis.—Prices show no change this week, although new figures were looked for. Trade is in fair volume and rather more than expected. Carload lots are placed at a price equaling $2.55, base, St. Louis. Single cars are quoted by jobbers at $2.65, base, and smaller quantities at $2.75, base, out of stock.

Pittsburgh.—The expected announcement by the American Steel & Wire Company of an advance in Wire Nails, to become effective on July 1, has not yet been made, but is expected any time. The demand for Wire Nails is reported to be very fair, though not as heavy as some time since. Several of the largest mills of the American Steel & Wire Company are not running this week, being closed for necessary repairs and inventory. We quote: To jobbers in carload lots, $2.35; to jobbers in less than carload lots, $2.37½; to retailers in carload lots, $2.45; to retailers in less than carload lots, $2.55, all f.o.b. Pittsburgh, with freight to destination added.

Cut Nails.—Eastern manufacturers of Cut Nails have advanced the price 10 cents per keg, the change dating from June 27. This makes carload lots to jobbers $2.10, f.o.b. Pittsburgh, with freight added to destination. The 5 cent rebate per keg to jobbers in lots of 2000 kegs is not affected by the advance in price. Quotations are as follows, f.o.b. Pittsburgh, freight being added to destination:

To jobbers in carload lots	$2.10
To " in less than carload lots	2.15
To retailers in carload lots	2.15
To " in less than carload lots	2.30

New York.—Supply and demand continue about equal. As a result manufacturers are not accumulating stocks to any extent. The 10 cents per keg advance by Eastern manufacturers results in the following quotations: Carload lots on dock, $2.25 to $2.30; small lots from store, $2.40 to $2.45.

Chicago.—The demand is good considering the limited character of this trade, small lots being firmly held at $2.15.

St. Louis.—Further advances have been named by makers and to-day's price in large lots is $2.18, base, East St. Louis. Jobbers quote $2.25, base, out of stock, and a further rise of 10 cents is expected in a few days.

Pittsburgh.—The tone of the Cut Nail market is strong, but some complaint is heard of cutting in prices by jobbers who have stocks of Nails bought at lower prices than ruling at present. There is a good demand and the mills are entering considerable business. We quote: To jobbers in carload lots, $2; to jobbers in less than carload lots, $2.05; to retailers in carload lots, $2.05; to retailers in less than carload lots, $2.20, all f.o.b. Pittsburgh, to which freight to destination is added.

Barb Wire.—The demand for Barb Wire at this season is largely for export, domestic requirements being moderate. The market continues firm at unchanged quotations, as follows, f.o.b. Pittsburgh:

To jobbers in carload lots, Painted	$2.45
" " Galvanized	2.95
" in less than carload lots, Painted	2.47½
" " " " " Galvanized	2.97½
To retailers in carload lots, Painted	2.55
" " Galvanized	3.05
" in less than carload lots, Painted	2.65
" " " " " Galvanized	3.15

Chicago.—A good demand is reported by both manufacturers and jobbers, who find both Plain Wire and Barb Wire moving well for the season. Prices are quoted as before, except that manufacturers on the 1st inst. shortened their terms to net cash 30 days. Jobbers continue to quote their customers 60 days, 2 off for cash in ten days. Prices are continued at $2.45, Chicago, for carload lots of Plain Annealed Wire, $2.70 for Painted Barb Wire and $3 20 for Galvanized Barb Wire. Jobbers quote small lots from stock at 10 cents per 100 pounds above carload rates.

St. Louis.—The trade has slackened up, as due this month, and there is no reason to complain about its volume. The same prices remain and carload lots from mills are quoted as equal to $2.65, St. Louis. Jobbers' price, single cars, is $2.75, and smaller lots $2.85. The advance on Galvanized continues to be 50 cents per 100 pounds.

Pittsburgh.—The expected announcement of an advance in prices of Barb Wire by the American Steel & Wire Company, to take effect July 1, has not yet been made. Demand for Barb Wire is quiet, the season being pretty well over. We quote at $2.45 for Painted in carload lots to jobbers and $2.55 to the small trade, with an advance of 50 cents for Galvanized, all f.o.b. Pittsburgh.

Smooth Wire.—The mills are not yet in a position to fill orders as promptly as the trade desire, owing to the volume of orders on their books. Quotations are as before, f.o.b. Pittsburgh:

To jobbers in carload lots	$2.20
To " in less than carload lots	2.2[illegible]½
To retailers in carload lots	2.30
To " in less than carload lots	2.40

The charge for Galvanizing is 50 cents on sizes from 6 to 14 inclusive; on Nos. 15 to 16 it is 85 cents and on Nos. 17 and 18 $1.10.

Pittsburgh.—There is a fair demand, though not as heavy as some time since. The expected advance in prices on July 1 has not yet been made. We quote: To jobbers, $2.20; to small trade, carload lots, $2.30, and less than carload lots, $2.40, on Galvanized Plain Wire, all sizes up to and including No. 14, 50 cents advance; 15 and 16, 85 cents; 17 and 18, $1.10, all f.o.b. Pittsburgh, with freight to destination added.

Registers and Ventilators.—Under date June 23 an advance was made by the manufacturers of Hot Air Registers and Ventilators. The same plan which has been in

force in regard to prices in different parts of the country is continued, the United States being divided into three classes, which have different discounts, as follows: Mississippi River discounts, covering Mississippi River points and all points east and also Pacific Coast points; discounts for Western jobbing points No. 1, comprising specified cities between the Mississippi and Missouri Rivers; discounts for Western jobbing points No 2, comprising designated places beyond the Missouri River. The following are the prices which are announced as applying to Mississippi River points and all territory east of the Mississippi as well as Pacific Coast points, covering all sections of the United States excepting Western jobbing points Nos. 1 and 2, terms 60 days or 2 per cent. discount for cash in ten days:

	Discount. Per cent.
Black Japanned Registers, Ventilators, Faces and Borders	40
White " " " and Faces	30
Bronzed Finishes in imitation of Gold, Silver, Copper or Bronze	40
Nickel Plated	40
Electro Plated in Brass, Bronze, Copper or Oxidized Silver	40
White Porcelain	30
Solid Brass and Bronze Metal	25
Pedestal Registers	25
Carved Ceiling Ventilators for Churches	30
Dampers	40
Chandelier Ventilators	30
Summer Pieces	40
Screens for Steam Pipes	50
Slate Border Frames	50
Soapstone Border Frames	30

For Western jobbing points No. 1 the discount on Black Japanned Registers, &c., is 30 and 10 per cent., and for Western jobbing points No. 2, the discount is 30 per cent. The manufacturers desire that jobbers maintain the prices which are determined for their respective territories.

Screws.—At a meeting of the associated Screw manufacturers, which was held on the 28th ult., the published discounts on Wood Screws were made as follows:

	Discount. Per cent
Flat Head Iron	82½
Round and Oval Head Iron	80
Flat Head Brass	77½ and 10
Round and Oval Head Brass	72½ and 10
Flat Head Bronze	72½
Round and Oval Head Bronze	70

The reason for this advance is the marked increase in the cost of the raw material.

Russell & Erwin Mfg. Company.—Under date June 28 Russell & Erwin Mfg. Company, New Britain, Conn., and New York, issue a revised sheet of prices relating to Screws, Stove Bolts, Wire Nails, Escutcheon Pins, &c. The new discounts mentioned above on Wood Screws are given.

American Screw Company.—American Screw Company, Providence, R. I., issue under date June 28 revised discount sheet, in which they call attention to the changes in discounts on Wood Screws adopted 28th ult. and to the changes on Rivets and Burrs adopted 14th ult.

Hobart B. Ives & Co.—Under date July 1 Hobart B. Ives & Co., New Haven, Conn., announce the following discounts on Hardware of their manufacture, as shown in their 1899 catalogue, terms 60 days net, less 2 per cent. discount for cash in ten days:

	Discount. Per cent.
Window Ventilating and Mortise Door Bolts	62½
Sash Locks, Wrought Steel, also with Bronze Metal Knob	62½
" " " Bronze and Brass Metal	60
" " Cast Iron, also with Bronze " Knob	66⅔
" " " Bronze and Brass Metal	65
Window Stop Adjusters	25 and 5
Sash Lifts and Shutter Bars	50

Yale & Towne Mfg. Company.—Under date June 14 Yale & Towne Mfg. Company, 9 to 13 Murray street, New York, issue revised list prices on Padlocks. Under date June 15 they issue new list prices on Locks, Latches and Miscellaneous Hardware, which are to be substituted for those in their price books Nos. 1 and 2. These new prices will be subject to their regular trade discounts applying to the several discount groups and will not be subject to the two advances of 10 per cent. announced in their circulars January 30 and April 27, 1899. All other prices in price books Nos. 1 and 2 will continue to be subject to the two advances of 10 per cent. each above referred to, with the exception of Door Checks, Padlocks, Cabinet and Trunk Locks and Yale Night Latches.

Tacks.—The condition of the market in the raw material and the active demand has been, as we have already noted, developing higher prices for Tacks, Brads, &c. There is some difference in the quotations of the manufacturers, but the market is fairly represented by the following range of quotations:

	Per cent.
American Blued Carpet	90 and 10 to 90 and 20
" Tinned "	90 and 10 to 90 and 20
" Cut	90 to 90 and 5
Swedes Iron Tacks	90 to 90 and 10
Upholstery and Gimp Tacks	90 and 30 to 90 and 35
Lace Tacks	85 and 10 to 85 and 20
Trimmers' Tacks	90 to 90 and 10
Looking Glass Tacks	70 to 70 and 10
Hungarian Nails	80 and 5 to 80 and 10
Bill Posters' and R. R. Tacks	90 and 20 to 90 and 30
Common and Patent Brads	75 to 75 and 5
Trunk and Clout Nails, Blued	75 and 10 to 80
" " " " Tinned	75 and 10 to 80

There is also some irregularity owing to the fact that many jobbers are in a position to undersell the manufacturers, having purchased ample stocks at lower prices than are now current.

Augers and Bits.—The market on Augers and Bits continues in improved condition and the higher prices determined upon are being quite well maintained. The market is represented by the following quotations:

	Discount. Per cent.
Common Double Spur Augers and and Bits	70 to 70 and 5
Nut and Boring Machine Augers	70 to 75
Car Bits, 12 Inch, Twist	60 and 10 and 10 to 70
Jennings' Pattern Auger Bits	60 and 10 and 10 to 70

Snell's Ship Augers are quoted at 40 to 40 and 10 per cent. discount.

Stillson's Wrenches.—By the advance recently made in the price of Stillson's Wrenches the discount in small lots is made 60 per cent

Pumps.—The market for Cistern and Pitcher Spout Pumps is firm and somewhat higher prices are current.

Glass.—No steps have yet been taken toward arranging a wage scale for Glass workers in the fall. With the production of Glass ended for the summer and a good general demand throughout the country no falling off in prices is anticipated. Reports continue contradictory as to the success attending the formation of the new Glass combine, and at present the outlook is said not to be favorable to the consummation of the plan. New York jobbers continue former quotations of 80 and 20 per cent. discount for small lots of Glass and 85 per cent. discount for carloads. The American Window Glass Company's prices are as follows:

Districts.	A.	B.	C.	E.
5000 boxes or more	85 & 5	85 & 5	.....	85 & 5
Carloads	80 & 20	80 & 20	85	80 & 20
3000 boxes or more	85	85	.....	85 & 2½
1000 boxes or more	.....	.....	85 & 5	.....

These prices are subject to freight allowance.

Paints and Colors—*White Lead*—Trade in White Lead is referred to as having been exceptionally satisfactory during the month of June. Lead in Oil continues to be ordered for immediate use, although at this season demand usually falls off. The market is firm at unchanged prices, as follows: In lots of less than 500 pounds, 6¼ cents; 500 pounds and over, 5½ to 5¾ cents per pound.

Spirits Turpentine.—The Turpentine market has not been active during the past week. The closing of the month, also of the first half of the business year, may have to some extent affected purchases. The market remained firm on a report of a shortage in the year's crop of about 15 per cent. Large export shipments were made from Savannah and also from New York. Quotations are 38½ cents per gallon for Southerns and 39 cents for machine made barrels.

Trade Winning Methods.

This department will contain a description of approved methods of bringing customers to the store by means of newspaper advertising, circulars and such special expedients and methods as are found useful by enterprising and progressive Hardwaremen.

A cordial invitation is extended to merchants to co-operate in the effort to make it suggestive and of practical use to the trade.

AN INDIANA MERCHANT'S ADVERTISING.

Something of the way in which a merchant in a small place keeps himself before those whose trade he seeks is here indicated. Mr. Crist, who is located at New Market, Ind., does no newspaper advertising, as he does not consider it would pay to do so in a place of 300 inhabitants. He believes in this kind of publicity, however, and would make use of it if situated at a more important point.

In the absence of newspaper advertising Mr. Crist depends on circulars, with copies of samples of which he has favored us. One of them, which is issued in the form of a blotter, we herewith reproduce in *fac-simile*, which gives an idea of Mr. Crist's terse and attractive literary style.

Following is the substance of another in which delinquent customers are urged to make good their obligations. It will be observed that Mr. Crist makes the point that "the better you keep me (him) paid the better I (he) can buy and sell you goods," a point which he illustrates. The circular is as follows:

PLEASE READ EVERY WORD!

It has always been my custom to pay at the end of the year all of my bills DUE to the houses annd firms of whom I buy goods; and on looking over my books I find I cannot do this unless those who owe me pay their bills. This is not a DUN, but a statement of facts.

Please remember that two hundred customers owing us each $3.00, makes $600.00, and that while your own account may not be much, you are one of the two hundred. This does not apply to recent bills, but to those sixty days or more old. The account may be wrong; if so, we want to right it. We are trying our best to sell you goods as cheap and we claim the most of the time cheaper than you can buy them anywhere else. To do this I must have my money to use at least every sixty days, and we hope our friends will not think hard of us if we have to tell them once in a while that we need money.

The better you keep me paid, the better I can buy and sell you goods. Always remember that the man who sells you goods on long time makes you foot the bill not only for the use of his money, but also for bad debts. We want to be of all the help we can to customers, but we do not have a dollar to loan, and goods are dollars.

Let me show you how it works: I pay $1.00 for goods, sell in thirty days for cash at $1.10, take the same $1.00 and buy again. If I can do this ten times in one year, I have made $1.00 clear. I sell the same goods to you for $1.30 on six months' time; I turn my $1.00 only two times and make only 60c., and you have paid three times as much profit. Can you see the difference? *Moral:* Pay cash, or at least be what we call a cash customer, not over thirty to sixty days. Thanking you for your trade, our book says you owe us $..... *We need it.*

R. G. CRIST.

NEW MARKET, IND., December 26, 1898.

Promptness Makes Credit and Makes Friends.

Mr. Crist's business is mostly done on a 30 or 60 day basis. In another circular he makes the following philosophical remarks concerning credit:

Credit.

We do not care to have any one on our books whose word is not as good as a bank.

We care not how poor a man is, when you buy anything look your merchant in the face and tell him when you will pay him; then be there that day if you have to go through snow and ice barefooted. If you cannot pay him at the time you say you will, tell him why, and my word for it, you will get fair treatment every time.

Every man's credit is just what he makes it; no more nor less.

The rich must pay because they are worth it; the poor if they want friends, because they have given their word they will do it, or the time soon comes when they cannot obtain credit.

If you have $100, and your word is worth $100, you are worth $200.

If your credit and business standing are good, and it is your aim to keep them so, then do not allow little bills to run until you are dunned for them.

If you are sometimes short and you borrow a small sum of money, pay it at the first opportunity. If you run little credit bills do not let them run until your attention is called to them. Pay them within proper time and your credit and reputation will not suffer.

If you have given a note do not allow it to mature; either pay it or secure an extension that will be satisfactory to the creditor. The man who pays his bills promptly is the man who always succeeds best in business. He has a great advantage over his fellow com-

PRICE is my salesman, QUALITY his assistant. I handle goods that are Cheap, but not Cheap goods. I sell only to those that pay and sell so that they come again and again. My success depends upon the success of my customers and their success with my goods depends upon the Price and Quality. I therefore am greatly interested in knowing that the quality and price cannot be successfully assailed. I want my goods to become your goods, and my store to become your store. When my store becomes your store I shall feel sure of seeing you or hearing from you often. I give special attention to Mail Orders and never substitute without permission, except on PRICES, I frequently give a lower price than the order calls for. I have a large stock to select from, but if not in stock to SUIT YOU I can get anything on earth that is to sell and the goods are my own unless THEY PLEASE YOU. I am looking for you and your friends. Look My Prices Over, and you will be looking for me and my store, and then my store will become your store and your store will become my store and the success of both will be Our Success.

Thanking you for your hearty support thus far and wishing you and yours a Merry Christmas.

I am yours to command.

New Market, Ind., Dec. 1st, 1898. R. G. CRIST

petitor who is known as "slow pay," because he is always able to take advantage of a special bargain when offered.

It costs less to do business on business principles than to be negligent and indifferent.

Honesty is the best interest bearing investment that a man can make.

The saving of money for the mere sake of it is a mean thing, even though saved by honest work; but where earned by dice throwing or other speculation, and without labor, it is still worse.

To provide for others and for our own comfort in old age is honorable, and greatly to be commended; but to hoard for mere wealth's sake is the characteristic of the narrow-souled and the miserly. But neither a man's means nor his worth are measurable by his money.

If he has a fat purse and a lean heart, a broad estate and a narrow understanding, what will his "means" do for him; what will his "worth" gain him?

Let a man be what he will; it is the mind and heart that make man poor or rich, miserable or happy; for these are always stronger than fortune.

More About Credit.

This subject is referred to again in the following terms, from which it will be seen that Mr. Crist considers his prices so low as to entitle him to cash on the spot:

At the price we are selling goods we aim to sell for cash, but to those whose word is worth 100 cents on the dollar we will do our best to take care of you 30 to 60 days.

We care not how poor you are, if you say you will pay at a certain time, pay it then, or tell your merchant why; but don't tell him you have no money and then take in all the shows and big excursions, smoke cigars and have a big time at his expense. It won't work. Hold your head up. Be a man.

If you cannot afford to have more than one shirt go to bed until it is washed. But never buy what you know you cannot pay for.

We like to sell goods, but we never work to sell a man anything if we know it will hurt him to pay for it.

All we ask is for you to do what you say you will do; we will take care of the rest.

His Line of Goods and Sales.

In the following extract from an illustrated folder, in which Mr. Crist refers to himself as "the Ceaseless, Tireless Toiler for Trade," he tells something about the line of goods handled, and recapitulates some of his sales for the preceding ten months:

We handle Hardware, Tinware, Queensware, Furniture, Stoves, Carpets, Wall Paper, Harness, Buggies, Surreys, Oils, &c., and in the last ten months have fitted out for housekeeping 14 wedded couples; have furnished Carpet for 32 rooms, Wall Paper for 54 rooms, 60 heating Stoves, 18 cook Stoves, 10 Buggies and Surreys, and other goods at the same rate.

Please remember that no matter how fine goods you want in any of the above lines, if I do not have it in stock I can get it for you, trimmed in any way you want.

If there is anything in the world you want to buy and save money on, come and see me. I can and will save you money.

I find by my books I am buying goods of 110 different firms.

Make known your wants; no trouble to show you goods nor look up prices. No matter what you want, speak right out in meeting.

Call us out of bed at night or down from dinner.

It doesn't make us mad when you make us go on the trot to wait on you.

Some Specimen Expressions.

Mr. Crist frequently uses cuts to illustrate his circulars, and from time to time indulges in poetry. Some of the more striking headings and captions which appear in his circulars are as follows:

Here It's Quality Rather Than Variety.

We Will Not Be Undersold.

It's the Unbreakable Rule of This Concern That Every Succeeding Season's Line Must Run Ahead of the Previous Season's Line in Style, in Sales.

After a First Purchase Has Been Made, We Have No Difficulty in Selling the Customer Again and Again.

Push, Perseverance, Promptness, Produce Popularity.

Predicted Prosperity Positively Present.

Properly Presented, Pungent Publicity, People's Purveyor Pays Persistent Pushers, Prevents Poverty, Provides Plenty Packed Purses.

Out After Trade, Come and See Us.

The Best at Any Cost to Us, at a Fair Price to You.

We're in Business to Accommodate You. You Can't Trouble Us.

The Iron Age Advertising Prize Competition.

We hereby announce an Advertising Prize Competition for the best advertisement relating to one of the following lines: Farmers' Tools, Apple Parers, Window Screens, Ice Cream Freezers, Meat Cutters.

1. **Object.**—The object of the Competition is to draw out the views of the trade in regard to the best and most effective methods of advertising the goods in question. The general participation of those interested in the Retail Hardware Merchant's advertising is invited, such use as we may deem advisable to be made of the competitions submitted.

2. **Form.**—Those entering the Competition should send to the address given below the design or draft of an advertisement in such form as to indicate clearly its size, subject matter, kind of type, character of display, &c.

3. **Size.**—The advertisement should not contain more than 25 square inches and may be arranged in one or more than one column.

4. **In Regard to Illustrations:**

(a.) The advertisement may be without illustration, or it may, at the option of the designer, contain one of the Cuts, Nos. 1 to 5, given in *The Iron Age* June 29.

(b.) If one of these cuts is used it may be indicated by pasting the illustration in the advertisement, or simply designating the cut by number, leaving proper space for it.

(c.) Original illustrations may be suggested, in which case a rough sketch, which will be sufficient to give our artist the idea of the illustration, will be acceptable.

5. **Date.**—This Competition, which is open to any in the trade, will close Saturday, July 22, 1899.

6. **Prizes.** — The following Prizes will be awarded:

FIRST PRIZE, $25.
SECOND PRIZE, $15.
THIRD PRIZE, $10.

All communications are to be addressed to

THE IRON AGE,
232-238 William Street,
New York.

Advertising Prize Competition.

NOTE.—The advertising cuts referred to above are given in an advertisement in this issue, together with others intended for use of retail Hardware merchants.

A HARDWARE BORDER.

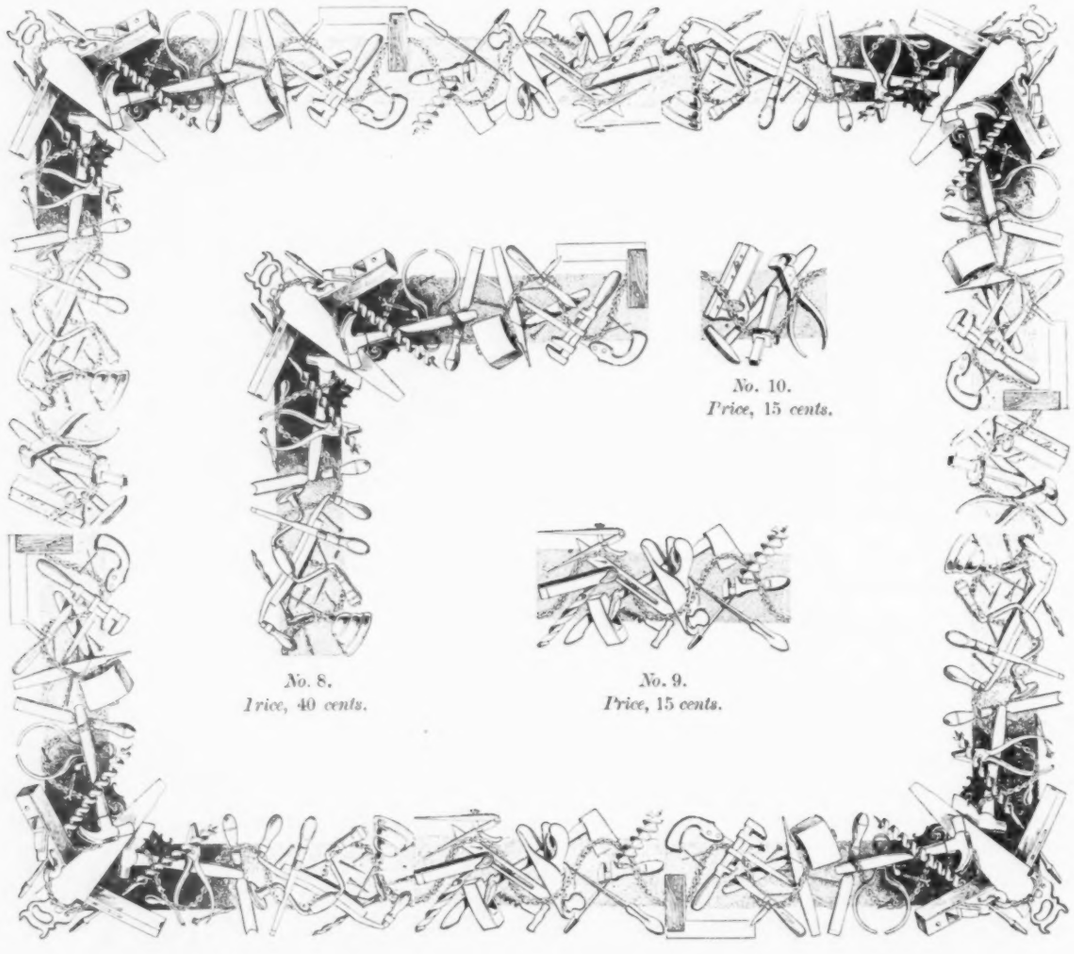
Some Hardware merchants find it advantageous to use a border in their advertisements, which helps to make them stand out separate from the rest of the advertising matter and thus brings them into prominence. To meet this demand the border represented in the accompanying illustrations has been prepared for the exclusive use of Hardware merchants. It is made up of a medley of Hardware articles, the aim being not to emphasize any one article but rather to direct the attention of the readers of the newspaper in which it is used to the advertisement in connection with which it appears. There is sufficient novelty and complexity in the border to attract the eye and awaken the curiosity. An advertisement thus made conspicuous might effectively make an announcement relating to some particular line of goods, giving opportunity for the best skill of the advertiser and the use of the most approved methods in advertising.

The border is made in three pieces or sections, Nos. 8, 9 and 10, as shown in the accompanying illustrations. It can thus be used with advertisements of various shapes and sizes, according to the manner in which these sections are combined. For example: The border as shown on this page is made up of four corners, No. 8, the top and bottom being lengthened out with two sections No. 9 and the sides by two sections No. 10.

A border about 4½ inches square can be made of four corner pieces, No. 8, without the addition of side pieces. If it is desired to have a border on one side of the advertisement and along the top, this can obviously be done and other combinations made according to the ingenuity of the advertiser.

The electrotypes of these borders can be obtained at the following prices: No. 8, 40 cents each; Nos. 9 and 10, 15 cents each. Borders of large size can be furnished at special prices. Other advertising cuts specially designed for the use of Hardware merchants are shown in an announcement among the advertising pages of this issue.

An expression of opinion on the part of the trade as to the adaptation of these cuts to the use for which they are intended is invited, as well as suggestions as to what we can further do in this direction to aid Hardware merchants in profitable and effective advertising. Criticisms and suggestions will be given the most careful attention.



No. 10.
Price, 15 cents.

No. 8.
Price, 40 cents.

No. 9.
Price, 15 cents.

A CRITICISM.

A Pennsylvania Hardware merchant takes exception to one of the advertisements given in a recent issue, in which a cut price for Barb Wire is announced. On this subject our correspondent says:

One of your specimen ads on page 4 June 15 issue is one that I take exception to from a Hardwareman's standpoint. I have sold Barb Wire for 15 years. And only one year besides this one has there been a chance to make a little money on it. I have always rejoiced that the Hardwareman did not follow the grocers in having leaders. They sell coffee and sugar at no profit.

The fact of having a lone carload does not signify that a price at which he could not replace should be made, and it would set the price for a radius of 50 miles.

If some dealers in nearby towns had bought up his carload and put it in their warehouse it would have been better for all concerned.

Combinations and Trusts.

BY E. H. LOYHED.

A paper read at the Annual Meeting of the Minnesota Retail Hardware Association, February 9, 1899.

(Continued.)

Enterprise.

The social system during these times gave no more scope to individual, self interested activity, which is now the main principle of our commercial life and legislation, than did the guilds themselves.

"On the country estates there could be no enterprise in seeking out a new line of life, for each peasant was bound to the land, and no lord would willingly part with his services.

"There could be no high farming while the custom of the manor and the collective ownership of teams forced all to adopt the same system of cultivation.

"There was no opportunity to raise one's self in the trades, for the prices of articles on which there would be much competition were fixed by law.

"Merchants were subject to special risks, or to special fines for protection, as well as heavy trading dues: prices were fixed by calculation, not by competition. In all classes the initative in progress lay less with the individual than with the king."

The guilds feared competition, but it came; we who have seen this competition have feared trusts, and they have come.

When Arkwright in the middle of the last century perfected his invention in spinning, and Cartwright brought out his method of weaving, a hundred or a thousand operatives working under a single management produced far more than the same number separately at their homes. A further impetus was received by Watts' improvement in the industrial use of steam, and factories were confined no longer to the banks of a tumbling stream. Wherever there was cheap fuel they could now be built, and the industrial centers began to change; for close crowding on these conditions came the railroad, allowing for the widest distribution of the manufactured product. "The labor of the solitary individual about the home fireside was replaced by the far off factory, and the multitude of wagoners and teamsters gave way to the engineer, whose iron steed hauled the loads of a thousand teams." Power was taking the place of muscle.

The Age of Competition

had now arrived. Seaports sprang into prominence as coaling stations, and soon outstripped the erstwhile more important towns which had no coal. Inland cities which had cheap fuel, or many railroads for the transportation of their merchandise, competed with the less fortunate rivals and gained the day. There was now the chance for an active man to push forward. The spirit of enterprise which had before been checked now formed a field in which to assert itself. "This change from hand to power in England is called the industrial revolution, because it came so fast that life could not be adjusted easily to the new conditions and the old order was broken down with confusion."

In America it has been called an evolution, for the change came at a time when industries were hardly started, as in this country power was used almost from the first.

"Thus industry on a large scale has been an industry of violent fluctuations. It has been an industry which gives occasional employment to a large number of hands, but which finds constant work at full time for comparatively few."

With the introduction of competition and a reference to utility instead of reasonableness in prices, we find ourselves at once in the presence of all the phenomena of modern as opposed to mediæval industry. We have openings for investment and speculation, we have a new feature in money as a purchasing power; the desire for wealth as an active incentive to work or business in place of mere duty to the guild as in the earlier days; but most of all we have the condition of affairs which gives opportunity for

The Existence of Capitalists.

Under this *régime* of competition there is a constant tendency for the position of laborers, as compared with that of capitalists, to be rendered worse. At each change in the method of conducting an industry, when the relative reward of capital and labor is readjusted there has been a depression of the laborer.

While Daniel De Foe was writing of the prosperous condition of the manufacturers under the guilds, the overworking and underpaying of the London bakers, who were subject to competition, had already begun. As each trade in turn came to be set free from State or guild regulation the depression of the laborers relatively to their employers in that particular industry also began. We admit, of course, that the laborer is better off than in the Middle Ages, but his betterment has not increased in the same proportion as the capitalist. One of the most striking facts is the enormous increase in production, which has been taking place during the whole period which has seen this steady comparative depreciation of the laborer. It has been called overproduction. This is a misnomer; it is under consumption. Until all men have an abundance of food, plenty of clothing, good homes and all the multitude of things that civilized man longs for there can be no overproduction. We are battling with the evil of underconsumption.

"While capital is much more fluid, much more indifferent to the direction of employment than labor, the capitalist has in these late days of depression suffered equally with his employees. By the fixed investment of his capital he has had to fight out to the end this fight without quarter, with the result that in spite of the enormous growth of our industries and population the number of competitors, though rapidly increasing for years, has lately shown a remarkable decrease."

This

Competition Among Manufacturers

attained its maximum between 1870 and 1880, and became known by the very proper name of cutthroat competition.

In 1890 the capital of concerns engaged in Iron and Steel manufacturing in the South increased 74 per cent. over 1880. The annual product increased 68 per cent., but the number of concerns had decreased 33⅓ per cent.

The high protective tariff, which encouraged these industries and brought many of them into existence, has merely hastened a condition of so-called overproduction which would naturally have come a few years later through competition, and widespread disaster would have followed but for the bigness of our country. The mechanic, who had spent his best days in learning a trade, was pushed aside by a younger, perhaps less capable man, or perhaps through the introduction of inventions that made his trade no longer of use. We had free land and the surplus labor could go on to that. Thus wages were upheld, and when this free, or comparatively free land disappears, unless new safeguards take its place, we may look for problems that cannot be solved by putting on more tariff.

Up to 20 years ago there was a very general belief in the efficiency of competition to control all industry, and one heard wise maxims, such as "Competition is the life of trade," and the like, but experience has shown that under certain circumstances competition ceases, because of the unceasing weariness of the struggle and abandons its good control. We have become so accustomed to competition that we

Slaughter Prices

unnecessarily. It has become a habit. The Associated Press last week contained extracts from an English Consular report, which took the American manufacturer to task for underbidding his English competitor nearly $20 per ton on Bolts, when 2 shillings would have done as well. Such an unnecessary cut in prices does no one any good. No price, however low, will suit a buyer after he

has become accustomed to such reductions, and it is probably a fact that this same Bolt maker cannot hold his trade if there should come the slightest advance either in wages or raw material. But "Use doth breed a habit in a man."

The effect of competition upon prices can be seen by referring to any

Old Invoices

of goods in which we are dealing. It may be asserted that the fall in prices has been caused by labor saving machinery, but, even so, that is only a form of competition. It may also be asserted that 30 years ago we had a debased currency. What of it? We are looking at those matters from the standpoint of men who owned the goods, not of the men who loaned the money. The man who loaned 1000 60 cent dollars in the late 60's got his pay in 100-cent dollars later on, but the price value of merchandise through this rise in money and through competition decreased more rapidly than the value of the loans increased.

I have here a small invoice from Nicols, Dean & Co., June 23, 1868, billed to my father, who has been continuously in the Hardware business in Faribault since 1855. The St. Paul firm was composed at that time of John Nicols, Wm. B. Dean and Peter Berkey. The invoice is for

3 Kegs 8d. Nails	$5.50	$16.15
3 " 10d "	5.25	15.75
2 Sets 1¾ x ⅛ Tire, 294 pounds	4¼	12.50
1 Slab German Steel, 10 x ¼, 84½	12	10 14
7 Sheets Zinc, 101	14½	14.64
30 Pounds No. 8 Wire	10	3.00
Drayage		35
		$72.88

Taking the same goods to day at the advanced prices that we have been lately feeling so jubilant over, they cost in our store with freight added $25.96.

I also have from a Chicago firm, among other items, 1 barrel, 42½ gallons, Boiled Oil, at $1.23 per gallon, f.o.b. Chicago. Here is one from Yale, MacFarlane & Co., New York for "net cash," which bills some No. 2 Cog Wheel Clothes Wringers at $78 per dozen, Porcelain Japanned Rim Knobs at $3.50 per dozen Porcelan Rim Knobs, Nickel Rose, at the low price of $7 per dozen, No. 1 Maydole Hammers $12.50 per dozen, Grub Hoes $16 and Railroad Picks $15 per dozen. Box and cartage on a $150 bill $3.25.

The fall in prices which has been in progress since then and the increase in the purchasing power of money, accompanied by the competition, which was severe as a cause for it, and doubly severe as the effect of it, has driven many a good man to the wall.

The young man who

Fails in Business

has done nothing more than 75 per cent. of other business men have done, and his life is still before him. He profits perhaps by the result of his former mistakes, and often rises to a greater hight in the commercial world than if he had not failed; but when the man of middle age who has fought his way with caution and strong intelligence steadily to the front meets final defeat in the desperate battle of competition we pause a moment in our own striving and give our sympathy to one who was deserving of a better fate. We all know this victim, who, in the slang of the street, "has been unable to keep up with the procession." We knew him in his days of power, when men obeyed his nod and beck. When we meet him now we note the look of care that lurks beneath his smiling front, and his pathetic nervousness in carrying out his part with jaunty unconcern. We become a little nervous ourselves, and our laugh of greeting almost betrays the tear of compassion for his fallen state.

We see him on the road selling a specialty on commission, or waiting expectantly about the office of a jobber's buyer, representing the line of some small manufacturer, hoping against hope that he may receive an order for the sake of "Auld Lang Syne." He has aided many a struggling youth in days gone by with money and advice, who now is high above him, and he feels with Cyrano de Bergerac, "My part has been to prompt, all my life is there! While I remained below, hid in the dark, others have climbed to kisses and to fame!"

(To be concluaed.)

For Lower Express Rates.

BY H. C. W.

AS retailers, as individuals, there is a vast amount of gratification apparent among all of us that that bane of all merchants, express rates, has gone into the mill; that its grinding, be it slow or fast, must eventually bring sure and lasting benefits for every individual interested. For years merchants have realized that ruling rates among the various companies meant slow ruin to any line of profits resulting, with only the reputation for promptness and accommodation as an offset.

A war begun so vigorously as that instituted by the Merchants' Association of New York should have the unqualified support of every man, every merchant and every association—retail, wholesale or national. With it lower rates must come in time; without such support it had better never seen a beginning.

The Record

of all express companies for the last 25 years shows them a perfect cinch for profits—for monopoly if you will, since it has proven a monster one. In any and all other classes of competition the merchant is met in a spirit of compromise; in express rates, never!

We cannot analyze the service performed. We cannot prove the market value of these services. We only know what their charges are; we do know that their profits are enormous, even though they hide them, put them into salaries, or water the stock as they will—and as they do.

The record shows their carrying power wonderfully increased, their expense wonderfully lessened in proportion, and their rates still all or more than they have been.

A Comparison

of present and past values in merchandise readily shows the fallacy of existing charges and any refusal to lower or equalize them.

The cost of nearly if not every line of trade product to day will not average over one-half its cost to the merchant ten years ago, and because of this the cost of securing rapid transit for these goods figures nearly or quite double the percentage of ten years ago. A simple matter of figures should long ago have given us rates one half the present. The average merchant can figure freight delivery at anywhere from 2 to 3 per cent. He loses all sight of percentage of cost on express goods, it frequently reaching the cost of the goods themselves. And yet it is the merchant who gives most attention to quick delivery and to express service who is counted the successful one, and to whom customers will invariably go for rush goods.

Collection or Transportation

has long since ceased to be a dividing line in the claim made by express companies that their service is the former, and that as such the charges come as nearly as possible being uniform ones. The service has long since reached the point where it is simple transportation—in that its increase has been phenomenal, in that its own work in increase of offices, wagons and enormous delivery shows it to be a common carrier, and no longer entitled to the exorbitant rates existing. It should have only a current market value of rates for transportation, based on the difference in time as between freight and express, or based on a percentage on the valuation of goods in transit.

The Value of Express Charges

to a merchant of to-day is something enormous when compared to the expense of freight transportation. Every morning there is paid out over his counter an average of from $3 to $5 in charges alone, representing in nearly every case from one half to two-thirds the entire cost of the goods and leaving no profit in sight, simply taking

care of your trade in a way and at a cost for taking care of it that would have delivered in your house, from an Eastern factory or jobber, $500 worth of goods to sell at a profit.

Discrimination

is shown in many cases and with many firms in spite of the claim made by the companies that existing charges are uniform, and this same discrimination is shown to the larger firm, who can command it because of competing lines, or that the United States mail may not have it, or on the claim that shipments are very many in the aggregate. By reason of such claims as these, and at the expense of the smaller dealers, these large seed houses, cutlery houses, premium concerns, &c., are enabled to make yearly contracts for express rates at less than one half those paid by the ordinary merchant.

This comes home to us frequently when for the betterment or the increase of their trade such houses offer prepayment of express charges and let them follow on the invoice for the goods.

Our Recourse

if any—and we believe there is—will be to follow up the war now being so strongly pushed by the Merchants' Association of New York. They should be followed at once by the National Hardware Association, by organization throughout the country, by all the State associations.

It would seem that if there ever was a time for the correction of this greatest evil in the business of the retailer it is now. We trust the trade papers will continue the good work they have started along the line. It means thousands of dollars in our profits and our pockets when an abatement of the evil comes—and it must come!

Correspondence.

LITTLE ROCK, ARK., July 1, 1899.

To the Editor: Some of our members have called my attention, and I also observed that the Associated Press had an item stating that our association had, at their meeting at Atlantic City, passed a resolution favoring *Trusts*. No such resolution was presented at our deliberation, nor was the subject discussed in general by the association, consequently the item was erroneous as set forth by the Associated Press, and in order to place the members of the Southern Hardware Jobbers' Association properly before the trade, will you kindly publish this card, by stating that the Associated Press was in error regarding this item? By so doing you will confer a favor not only on the members of the association, but also on the trade generally. Yours truly,

JAS. J. MANDLEBAUM,
President Southern Hardware Jobbers' Association.

New Edition The Iron Age Standard Hardware Lists.*

THE tenth edition of The Iron Age Standard Hardware Lists is now published. It contains 275 different lists of Hardware and related goods, a large number having been added to those appearing in former editions.

These lists are intended for office use or to be cut out and inserted in catalogues or price books. For this purpose they are printed on only one side of the paper. They are prepared with a special view to compactness of arrangement and convenience of reference, for which purpose a very complete index is provided. The different lists contained in the pamphlet are enumerated in the advertising columns in this issue.

There have been of late an unusually large number of changes in the list prices of Hardware, which should render this compilation useful to many merchants. Changes in the lists which may occur will be noted in *The Iron Age*, and by this means merchants can keep them posted up to date.

*THE IRON AGE STANDARD HARDWARE LISTS. Tenth Edition. Revised and enlarged. Published by David Williams Company, 232-238 William street, New York. Price 50 cents, postpaid.

The Consolidations of Business Interests.

A MERCHANT'S VIEWS.

TO those who believe that the true end of all consolidations is to finally render the price of goods cheaper to the consumer by means of those economies and improvements in organization and in methods which should necessarily accompany every well ordered concentration, it seems most unfortunate that the plan in general should start out on an entirely wrong and false basis. It would be unfair and inaccurate to generalize too much, but the facts of too frequent overcapitalizations, of plants purchased at two and three times their actual values, of schemes gotten up principally for the benefit of promoters and of issues of common stocks that represent nothing but prospective dividends, are too well known to need comment. These things are defended on the plea of necessity, and while it is probably true in many cases, yet, like every expedient, it is sure to bear logical and unhealthy fruit later on. The realization of economies has not come to pass. What has been saved in one way—principally in the dispensing with useless middlemen—has been spent elaborately in another direction.

The formation of a combination is invariably the signal for an advance in the price of its products, not that they cost any more, but because of the very human and irresistible reason that the demand is great and the source of supply under control. Thus the cry is going abroad that the consumer is being injured instead of being benefited, and an exposition of the laws of supply and demand does not always satisfy him. As might have been expected, in the changes incident to reorganization many people have been hurt and are crying out. This is something that will readjust itself in time, though for the nonce it arouses much antagonism.

In the drawing together of the sources of production and of consumption the middlemen must naturally suffer. It is the story of a gradual evolution and the law of "the survival of the fittest" is unceasingly at work. Another deep seated cause of antagonism to these combinations is the very human apprehension that individuality will be lost in the huge mechanism and that independence will be swallowed up in organization. This is the secret of much of the ignorant clamor that is impelling State Legislatures to pass all sorts of foolish and unreasonable "anti-trust" laws and is giving many demagogues a new lease of life. Whatever we may think of this phase of the question, it would be idle to ignore the fact that the feeling which prompts these laws is both deep rooted and widespread and may be productive of some very unpleasant consequences. It is always a mistake that an economic question cannot be left to settle itself instead of being dragged into politics. While the strength of these aggregations is generally known, their weakness is not so generally recognized. It is true that they are constantly making every effort to strengthen themselves by going back to the ultimate sources of supply in raw material, but it is equally true that they must inevitably have competition, and that it may prove competition of a serious nature, unless some of their present methods are altered. As long as money is cheap it will be an easy matter to procure it as an investment in any business which is showing abnormal profits. A new concern, financially strong, centrally situated and properly located, would be a competition which could not be ignored and which could not be successfully fought. Such concerns are pretty sure to be started up as soon as the present famine in raw material is past, unless the present aggregations have meanwhile adopted the policy of mar-

keting their goods at a margin which will be uninteresting to all save themselves.

So far as any attempt to bar out competition by controlling the sources of supply of raw material and of machinery is concerned, experience seems to show that such attempts are bound to end in failure. It must also be remembered that the success of every large aggregation depends absolutely upon the personality of those parties—or oftener of one person—who is managing it. Organization, discipline and system are of but little account without a dominant influence that most of all enforces harmony and co-operation. Upon whether the right men can be found to fill such positions depends the question of success or of failure.

In the final consideration of this momentous, perplexing problem, only of one thing can we be reasonably sure—that the tendency toward consolidations is not a passing phase of business life, but the deep laid evolution of elemental forces that are slowly, but surely, working out their own end.

Price-Lists, Circulars, &c.

AMES & FROST COMPANY, Chicago: "Imperial Facts and Their Verification," a 24-page brochure, beautifully printed and handsomely illustrated, giving many interesting points about Imperial Bicycles.

RACINE ECONOMY SPRING COMPANY, Racine, Wis.: Merits of the Economy Bolster Spring.

W. A. WALKER, Racine, Wis.: The new King patent Seat Spring and third person Buggy Seats.

THE SAMUEL WINSLOW SKATE MFG. COMPANY, Worcester, Mass.: Ice and Roller Skates, Ankle Braces, Skate Sharpeners, &c.

HERMANN BOKER & Co., 101-103 Duane street, New York: Gun department catalogue of Double Barrel and Repeating Shot Guns and Rifles and Ammunition trade price-list quoting Cartridges and Shells, &c.

THE W. H. CHAPMAN COMPANY, Middletown, Conn., Allerton Clarke Company, 97 Chambers street, New York, selling agents: Illustrated Catalogue No. 12 of Wrought Iron and Cast Iron Padlocks, showing new and additional numbers.

WHITMAN & BARNES MFG. COMPANY, Akron, Ohio, Illustrated booklet of Machine Shop, Mill and Factory Supplies and mechanical Rubber Goods. Also hanger advertising their Easy Rubber Vehicle Tires.

TUCKER & DORSEY MFG. COMPANY, Indianapolis, Ind.: Hardware and Wooden Ware Specialties, including Alarm Tills, Saw Frames and Bucks, Stove Trucks, Towel Rollers and Racks, &c.

J. M. WEST MFG. COMPANY, Lancaster, Pa.: Circulars relating to Mouse and Rat Traps

Trade Items.

THE Seamless Steel Tubing, electric welding of Bicycle parts and general welding business of the Standard Tool Company, Cleveland, Ohio, has been transferred to a new company to be known as the Standard Welding Company, with factory and offices at practically the same place as that of the Standard Tool Company. With increased facilities the new company are soliciting the patronage of the trade, promising the same promptness and attention to details as characterized the dealings of the Standard Tool Company.

UNDER date of June 30 announcement is made that the firm of Walter W. Woodruff & Sons, Mount Carmel, Conn, which were dissolved by the death of Walter W. Woodruff on December 30, 1898, have passed out of existence, and have been succeeded by the Walter W. Woodruff & Sons Company, incorporated under the laws of the State of Connecticut. There will be no change in the personnel of the management, the sons of Walter W. Woodruff, who have been connected with the firm for nearly 20 years, continuing the business. Willis E. Miller is president of the company, Arthur E. Woodruff, treasurer, and Harry P. Woodruff, secretary. The company state that they will continue to produce, as in the past, only the best goods in Coach and Carriage Hardware and Fine Mountings.

JAMES H. OLIVER, a younger brother of Frank J. and Thomas E. Oliver, who has been associated in business with them since the organization of the firm of Oliver Brothers, 127 Duane street, New York, has been admitted to partnership in recognition of his ability and fidelity. With a thorough Hardware training and close application to business he has merited this substantial promotion, on which he is the recipient of many congratulations.

F. E. KOHLER & Co., Canton, Ohio, advise us that they are making preparations to manufacture a line of Pressed Steel Seats for Agricultural Implements. They expect to be ready with them for the fall trade.

AMERICAN SCREW COMPANY, Providence, R. I., have sent out an attractive brochure in pamphlet form, on one page of which is reproduced in *fac-simile* the Declaration of Independence. On the three remaining pages the Declaration is printed in plain Roman type, together with the names of the signers and the 13 colonies they represented.

ALLEN HARDWARE COMPANY, Charlotte, N. C., held their annual meeting on June 30. A very satisfactory report was rendered in regard to the business of the year, and in view of their increasing trade and the promise of their further extension, the capital stock of the company was increased from $30,000 to $50,000. The election of officers resulted in the re-election of the following: D. E. Allen, president; Thomas E. Oliver, vice-president, and Frank J. Oliver, secretary and treasurer. Trade was referred to as in excellent condition. The company have four travelers on the road all the while.

Among the Hardware Trade.

F. S. McMackin has purchased the Hardware and Stove business of J. P. Ring, at Burlington Junction, Mo.

Arthur E. Horlock Company have purchased the business of A. J. Delaney, Hanford, Cal. The firm expect to move into larger and more commodious quarters about September 1.

J. D. Gordon is now conducting the Hardware business formerly carried on by J. C. Smith, at Craig, Neb.

M. J. Dougherty has opened up in business at Mount Vernon, S. D., handling a line comprising both Shelf and Heavy Hardware, Stoves and Tinware and Farm Implements.

The firm of Buck & Adams, retailers of Hardware, Edinburg, N. D., have dissolved. J. B. Buck is successor.

Mason & Crahan, North Java, N. Y., have dissolved, and John E. Mason is now conducting the business alone.

Dunham Hardware & Implement Company, W. L. B. Dunham, proprietor, Lansing, Mich., have purchased the Porter stock of Hardware in that city.

D. E. Cartier has purchased a third interest in the business of the B. J. Goodsell Hardware Company, Ludington, Mich.

Bell, Perkins & Price have succeeded W. A. Bell, at Lebanon, Ind.

Jones Hardware Company, Richmond, Ind., are putting up a large four-story building, which they expect to have ready for occupancy by December 1. Business has been prosperous and the demand for goods has increased to such an extent that larger capacity is necessary. The company are wholesalers and retailers of Shelf and Heavy Hardware, Stoves and Tinware and Sporting goods.

Bakersfield Hardware Company, Bakersfield, Cal., have recently been incorporated with a capital stock of $40,000. They have succeeded to the business formerly conducted by Hayden & White. R. J. White is president of the new company; B. A. Hayden, vice-president, and F. S. Benson, secretary.

N. Bergren & Son, coal and wood dealers, at Stockholm, S. D., are making arrangements to enter the Hardware, Stove and Farm Implement business.

Meyer & Flannelly are a new firm, at Elk Rapids, Mich., handling Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Sporting Goods, Roofing, &c.

Drake Hardware Company, Rockford, Ill., are a new firm. In addition to Shelf Hardware, Stoves and Tinware, they are conducting a Furnace, Cornice, Roofing and Skylight business.

Talbott, Bushnell & Wortz have purchased the business of the Malvern Hardware & Implement Company, at Malvern, Iowa.

J. L. Echols & Co. have opened up a Shelf Hardware business at Decatur, Ala.

Craig & Son are a new firm, at Centerville, Tenn., handling Shelf and Heavy Hardware and Farm Implements. They advise us that they discount all their purchases.

Black & Davis have dissolved, at Selma, Ind., and J. E. Davis is successor under his own name.

J. D. Burns has lately opened up in business at Colfax, Wis., under the style of the O. K. Hardware store.

Simmons Bros. have purchased the Hardware, Implement and Tinware business of Shewey Bros., at Rochester, Kan. They are building a new wareroom and making other improvements.

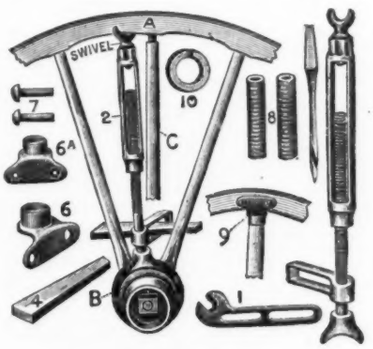
The Gould-Carter Company have succeeded Corbin-Carter Company, at Friendship, N. Y., Mr. Corbin retiring on account of poor health.

H. F. Eichler has sold his Hardware business in Augusta, Wis., to Otto F. Braeger, who will continue at the old stand, which he is remodeling.

Blackwood Bros. have succeeded J. Dodge in the Hardware business at Owosso, Mich.

The Lightning Tire Setter and Repair Outfit.

The Imperial Bit & Snap Company, Racine, Wis., have just placed on the market a device with which a



Lightning Tire Setter and Repair Outfit.

broken wagon or carriage wheel can be repaired in a few minutes. The accompanying cut shows the outfit as in use replacing a broken spoke. It consists of a jack, shown as No. 2 in the cut, and also shown enlarged on the right. The wood key, No. 4, is inserted in the slot casting at the bottom of the jack to prevent it slipping from the hub. The jack can then be screwed up so that a new spoke can easily be sprung in place. The tires can also be reset when loose, or dished wheels can be straightened with the aid of this device, all without taking the wheel from the axle, or cutting the tire and welding it. The wheels can thus be made to last as long as the other parts of the vehicle. The letters and figures shown on the cut are mainly intended for convenience in ordering parts of the outfit.

Bicycle Safety Strap.

The accompanying illustrations show the bicycle safety strap, or brace, for re-enforcement of the front fork of a bicycle, which J. D. Lynde, Haddonfield, N. J., is putting on the market. The maker claims that a common source of injury to riders of bicycles is the breakage of a front fork, and that the device shown is practically an insurance against the possibility of such injury. Fig. 1 shows the construction of the device. Two bands of cold rolled steel are bolted to the head tube, and further clamped to the fork sides by means of the clamps provided for the purpose, and as shown in Fig. 2. For bicycles having short head tubes and low down nameplates a special form of head post connection has been

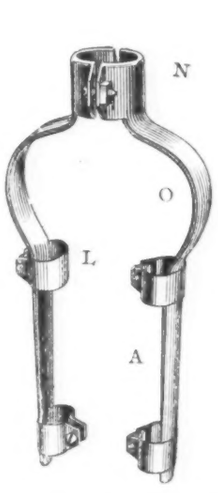


Fig. 1.– Bicycle Safety Strap.

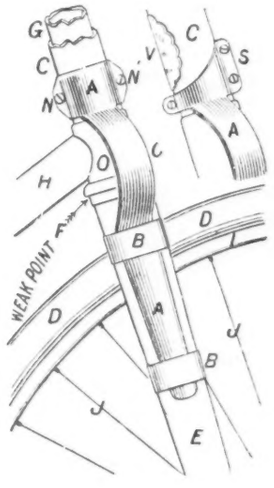
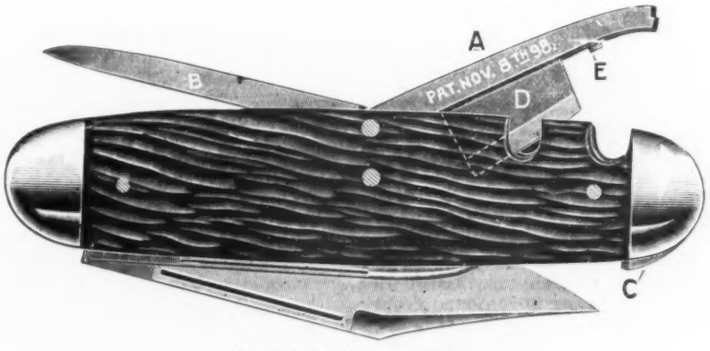


Fig. 2.– Safety Strap Applied.

devised, as shown at S in Fig. 2. The curves O are designed to permit of a wheel being turned almost at right angles to the frame, or more than could be possibly required in riding. The strap is made in black enameled, black enameled and decorated and nickel plated finish, and is neatly packed in a cardboard box. It is made in sizes to suit the various makes of wheels on the market, and special wheels are readily provided for.

Miners' Combination Knife.

Novelty Cutlery Company, Canton, Ohio, are making the miners' combination knife, here illustrated, actual size. In it is combined two knife blades, fuse cutter and splitter, as indicated by D and the dotted lines, cap crimper and seater. The advantages claimed for the knife by the manufacturers are that it cuts the fuse and splits it clean and in the center; crimps the cap and makes a seat for the cap. The fuse cutter A opens automatically by pressing on the lock spring G. Having great leverage, it requires but a light pressure to cut the fuse or crimp the caps. With the seater B is made a seat for cap in the powder, for the purpose of insuring a certain blast. When the fuse is cut with the blade D it retains its shape in the groove made in the knife back, and is ready for the cap without any further operation. Should the fuse be soft or swelled it can be reduced by placing it under the seater B, a few pressures on the seater bringing it to the proper size for cap. The point E makes a dent in the cap, so that it cannot become displaced or drop from the fuse. The knife blades are said to be of the best steel and perfect in temper, first-class material being used throughout.



Miners' Combination Knife.

The Niagara Bath Spray.

The accompanying engravings show the Niagara bath spray which the Niagara Manufacturing Company, Thirteenth and Buttonwood streets, Philadelphia, Pa., are puting on the market. The spray is adapted for use on either combination or single bath cocks. The article is quite simple in construction, there being practically but four parts. Fig. 1 shows the spray attached to a combination bath cock. C is a clamp, P a hollow tapered rubber plug, S a metal tube with spray end and A an adjusting rod to govern the angle of the discharge by

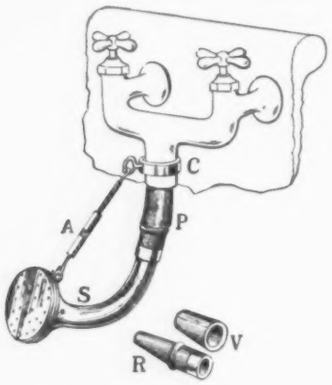


Fig. 1.—Niagara Bath Spray.

raising or lowering the spray end. The plug P is made in two parts, as represented by R and V. R is used for small openings, and for large openings the sleeve V is slipped over R, thus increasing the size of the plug proper. Where separate spigots are used in a bath tub the style shown in Fig. 2 is used. This style is similar to that shown in Fig. 1, excepting that a rubber tube and elbow is used to connect both spigots and thus secure the advantages incident to the use of a combination bath cock. In Fig. 2 U shows the rubber tube, provided of a length to suit any distance between the spigots, and L a rubber connecting elbow. In this form the attachments are made on the outside of the spigots, provision for attaching having been made by the enlargement of the upper ends of T and L. For smaller spigots the bushings E and F are used. When in use the resulting shower is well within the limits of the tub, and by the adjustment of the regulating rod and water pressure at the spigots a strong or gentle shower may be obtained as desired. By proper adjustment lady bathers may avoid

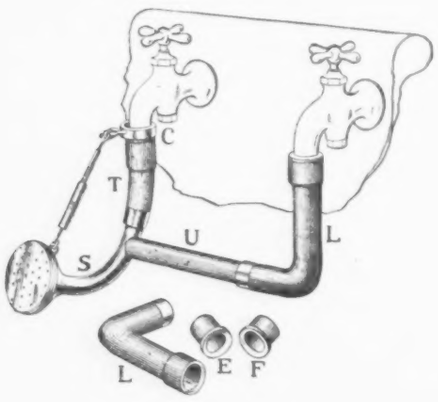


Fig. 2.—Niagara Spray on Separate Bibs.

wetting of the hair, and small children may bathe in perfect safety provided the outlet plug is removed from the tub. Besides the ordinary use of the shower, the makers point out its usefulness for shampooing. All metal parts of the device are nickel plated, and the rubber parts are made from a fine quality of rubber. We are advised that the retail price of the article has been placed low enough to bring it within the reach of everybody.

G. M. Bryan, Jr., & Co., Galveston, Texas, have incorporated under the style of the Bryan Hardware Company, with a paid up capital of $50,000. Mr. Bryan is president of the corporation, who will add Stoves, Tinware, House Furnishing Goods, Refrigerators and Mantels to their present line. Mr. Bryan left on the 1st inst. on a trip, during which he will visit St. Louis, Chicago, Detroit, Boston and New York.

Frank Frick, Kildare, O. T., owing to the fact that his present quarters are inadequate, has purchased three lots in that place, on which he will erect a large establishment with glass front. Mr. Frick handles Shelf and Heavy Hardware, Stoves, Tinware, Sporting Goods, as well as Farm Implements, Wind Mills, Wagons, Buggies, &c.

CONTENTS.

Current Hardware Prices.

REVISED JULY 3, 1899.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer are printed in *Italics*, and the prices named represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. They apply to such quantities of goods as are usually purchased by retail merchants. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, and are in many cases their regular prices to the small trade, lower prices being frequently quoted to the fair retail trade, either by the manufacturers or by the jobbers.

Cut Prices.—*In the present condition of the market, while many advanced prices are announced by the manufacturers, lower prices are often made by the wholesale trade who have stocks on hand purchased at former quotations.*

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE INDEX SUPPLEMENT (April 6, 1899), which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—A new edition of "Standard Hardware Lists" is in preparation and will contain the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters Blind—

Domestic, ₱ doz. $3.00....33⅓@33⅓&10%
North's.....10%
Zimmerman's—See *Fasteners, Blind.*

Window Stop—

Ives' Patent.....40%
Taplin's Perfection.....5%

Ammunition—See *Caps, Cartridges, Shells, &c.*

Anvils—American—

Eagle Anvils.....₱ lb 7¼@7¾¢
Hay-Budden, Wrought.....8¼@8¾¢
Horseshoe brand, Wrought.....9¼@9¾¢
Samson.....₱ lb 7¼@8¢
Trenton, Wrought.....₱ lb 8¼@8¾¢

Imported—

Armitage's Mouse Hole.....8¾@9¼¢
Peter Wright's.....9¼@9¾¢

Anvil, Vise and Drill—

Millers Falls Co., $18.00.....20%

Apple Parers—See *Parers, Apple, &c.*

Augers and Bits—

Common Double Spur...75¢&10@80%
Boring Machine Augers..75¢&10@80%
Car Bits, 12-in. twist.....60¢&10@70¢&10%
Jennings' Pattern:
Auger Bits.....70¢&5@70¢&10%
Car Bits.....60¢@60¢&10%
Ford's Auger and Car Bits..40&10@40&10&10%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list.....40@40&10%
No. 30. R. Jennings' List..50&10@60%
Russell Jennings'.....25&10&2½%
L'Hommedieu Car Bits15&10@15&10&5%
Pugh's Black.....20%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....70%
Snell's Bell Hangers' Bits.....5%
Snell's Car Bits.....60&10&5@70%
Wright's Jennings Bits (R. Jennings' list).....50%

Bit Stock Drills—

Standard List.....60¢&10¢&10@70¢&5%

Expansive Bits—

Clark's small, $18; large, $26.....50&10%
Lavigne's Clark's Pattern, No. 1, ₱ doz., $26; No. 2, $18.....50&10%
Steer's No. 1, $36; No. 2, $18...40@40&5%
Swan's.....40@40&10%

Gimlet Bits—

Common Double Cut..gro. $2.75@3.25
German Pattern.....gro. $5.00@5.50
Double Cut, makers' lists.....50¢&5@50&10%

Hollow Augers—

Bonney's Adjustable, ₱ doz.....$18.00
Douglass'.....33⅓@33⅓&10%
Stearns', Common, No. 6.....10%
Stearns', all other numbers.....20&10%

Ship Augers and Bits—

Ford's.....40&10@40&10&10%
Snell's.....40&10&5%
L'Hommedieu's.....15&10@15&10&10%
Watrous'.....40@40&10%

Awl Hafts, See *Hafts, Awl.*

Awls—

Brad Awls:
Handled.....gro. $2.75@3.10
Unhandled, Shouldered gro.65@70c
Unhandled, Patent.....gro. 70@75c
Peg Awls:
Unhandled, Patent....gro. 33@35c
Unhandled, Shouldered.gro.65@70c
Scratch Awls:
Handled, Common..gro. $3.00@3.75
Handled, Socket..gro. $11.00@12.00

Awl and Tool Sets—See *Sets, Awl and Tool.*

Axes—

First Quality, best brands.$5.25@5.50
First Quality, other brands$4.50@4.75
Jobbers' Special Brands:
Good Quality.....$4.25@4.50
Best Quality.....$5.00@5.25
Cheap Handled Axes.....4.75@5.25
Good Handled Axes.....$5 00@5 25
Beveled, add 25c doz.

Axle Grease—See *Grease, Axle.*

Axles—

	Iron.	Steel.	
Concord, loose collar	5¼c	5 c	5% cash
Concord, solid collar	5¾c	5½c	
No. 1 Common	4 c	3¾c	
No. 1½ Com. New Style	4½c	4¼c	
No. 2, Solid Collar	4¾c	4½c	
Nos. 7, 8, 11 to 14	.....60&5%		
Nos. 7, 8, 11 to 14, 100 sets..extra10%			
Nos. 15 to 18	.....50%		
Nos. 19 to 22	.....70%		

Balances—

Sash—

Caldwell low list.....30%
Pullman's.....65%
Vanderbilt.....30%

Spring—

Spring Balances.....50@50&5%
Chatillon's Light Spg. Balances.....50%
Chatillon Straight Balances.....40&10%
Chatillon Circular Balances.....50&10%
Chatillon's Large Dial.....35%

Barb Wire—See *Wire, Barb.*

Bars—Crow—

Steel Crowbars, 10 to 40 lb.. per lb... 3@3½¢

Beams, Scale—

Scale Beams, List Jan. 12, '82.....40&10@50%
Chattillon's No. 1.....30%
Chattillon's No. 2.....40%

Beaters—Egg—

Dover Pattern, Family Size.....gro. $5.50@5.75
Spiral.....gro. $3.00@3.25
Dover (Standard Co.), No. 10, ₱ gro. $3. 5; No. 5, $4.75; No. 15, $14.00
Dover (Tap in Mfg. Co.) No. 50, ₱ gro. $5.25; to 100 $6.25; No. 102, $8.00; No. 150 ₱ doz. $1.50; No. 152 $2.00.
Lyon's Standard Ex.....₱ doz. $1.75
Wonder (S. S. & Co.).....₱ doz. 75¢

Bellows—

Blacksmith—

Standard List.....70@70&5%

Inch..	30	32	34	36	38	40	Net Prices.
Eac h..	$4.25	4.50	5 25	5.75	6.50	7.75	
Extra Length:							
Each..	$4.75	5.25	5.75	6.50	7.40	8.75	

Molders—

Inch..	9	10	11	12	14	16	Net Prices.
Doz...	$6 75	7.25	8.50	9.50	12.00	14.50	

Hand—

Inch...	6	7	8	9	10	12	Net Prices.
Doz....	$3.75	4.25	4.50	5.00	5.75	6.75	

Bells—Cow—

Ordinary goods.....75¢&10%
High grade.....70@70¢&10%
Jersey.....75@75&10%
Texas Star.....50&10%

Door—

Gong, Yankee.....60&10%
Ho e, R. & E. Mfg. Co.'s.....50&10%
Lever and Pull, Sargent's.....45&10@45&10&5%

Hand—

Hand Bells, Polished.....65&10@70%
White Metal.....65&10@70%
Nickel Plated.....30&5@50&10¢&5%
Swiss.....65@65&10%

Miscellaneous—

Farm Bells.....lb. 2@2½c
Steel Alloy Church and School.....50&10@60%

Belting

Rubber—

Common Standard.....70&10@75%
Standard.....60¢10@70%
Extra.....60@60&10%
High Grade.....60@60¢10%

Leather—

Extra Heavy, Short Lap.....50¢10%
Regular Short Lap.....60@60¢5%
Standard.....60¢10@60¢10¢5%
Light Standard.....70¢10%

Bench Stops—See *Stops, Bench*

Benders and Upsetters, Tire—

Brettell Tire Upsetter, $15.....50%
Green River Tire Benders and Upsetters.....20%
Stoddard's Lightning Tire Upsetters.....40@50%

Bicycle Goods—

Lane's Cycle Hanger.....33⅓&5%
John S. Leng's Son's 1899 list:
Balls.....50%
Chain.....50%
Parts.....50%
Spokes.....50&10%

Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

Bit Holders—See *Holders.*

Blind Adjusters—See *Adjusters, Blind.*

Blind Fasteners—See *Fasteners, Blind.*

Blind Staples—See *Staples, Blind.*

Blocks—Tackle—

Common Wooden...75¢10@75¢10¢5%
Eddy's All Steel, Common Bushed....70%
Eddy's All Steel, Bronze Bushed...60&5%
Hartz All Steel, Common Bushed.50&10%
Hartz All Steel, Bronze Bushed..50&10%
Ford's Star Brand, Self Lubricating..70%
Hollow Steel, Ford's Pat. Star Brand...50&10%
Lane's Pat. Adj., Perfect Safety and Junior.....30%
Stowell's Novelty, Mal. Iron.....50&10%
See also *Machines, Hoisting.*

Boards, Stove—

1899 List:
Zinc.....80%
Othe s.....40%

Bolts—

Carriage, Machine, &c.—

Common, list Jan. 30, '95.60&10@....%
Norway Iron, $3.00, list Oct. 7, '84..75¢10@75¢10¢5%
Phila. Eagle, $3.00 list.....80@80¢10%
Bolt Ends, list Jan 30, '95.60¢10@....
Machine, list June 12, '96.....60¢10¢10@....%

NOTE.—Jobbers' prices on Bolts are now generally lower than manufacturers'.

Door and Shutter—

Cast Iron Barrel, Round Brass Knob:

Inch.....	3	4	5	6	8
Per doz...	$0.27	.30	.38	.48	.66

Cast Iron Bottom, Japanned:

Inch.....	6	8	10
Per doz.....	$0.83	1.05	1.65

Cast Iron Chain, Flat, Japanned:

Inch.....	6	8	10
Per doz.....	$1.10	1.32	1.87

Cast Iron Shutter, Brass Knobs:

Inch.....	6	8	10
Per doz.....	$0.52	.77	.88

Wrought Barrel Brass Knob:

Inch.....	3	4	5	6	8
Per doz	$0.44	.50	.61	.70	1.28

Wrought Barrel.. 70&10@70¢10¢10%
Wrought Barrel, Bronzed.50¢10@60%
Wrought Flush, B. K.....50¢20@70%
Wrought Shutter.....60@60¢10&5%
Wrought Square Neck.....60¢5@75%
Wrought Sunk.....60@60¢10%
Ives' Patent Door.....65@65&10%

Stove and Plow—

Plow.....70@70¢10%
Stove, list August 27, '1898....67½@70%
Note.—See Trade Report.

Tire—

Common, list Feb. 28, '83....67½@70%
American Screw Company:
Norway Phila., list Oct. 16, '84.....75%
Eagle Phila., list Oct. 16, '84.....80%
Bay State, list Feb. 28, '83.....67½%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84.....75%
Eagle Phila., list Oct. 16, '84.....80%
Eclipse, list Feb. 28, '83.....67½%
Port Chester Bolt & Nut Company
Empire, list Feb. 28, '83.....67½%
Keystone Phila., list Oct. '84.....80%
Norway Phila., list Oct. '84.....75%

Borers, Tap—

Borers Tap, Ring, with Handle:

Inch.....	1¼	1½	1¾	2
Per doz...	$3.50	4.20	5.00	6 50
Inch.....		2¼		2½
Per Doz.....		$7 50		10.25

Enterprise Mfg. Co.....25@30%
No. 1, $1.25; No. 2, $1.65; No. 3, $2.50 each.

Boring Machines—See *Machines, Boring.*

Braces—

NOTE.—Most Braces are sold at net prices.
Common Ball, American...$1.10@1 20
Barber's.....60@60&10%
Fray's Genuine Spofford's.....50&10&5%
Fray's No. 70 to 120, 81 to 123, 207 to 414.....50&10&5%
P., S. & W. Co., Peck's Patent.....60&10&5@60&10&10%

Brackets—

Cast Iron, plain..... 75@75¢10%
Wrought Steel .....70¢10@75%
Bradley's Wire Shelf..... .75&10@80%

Bright Wire Goods—See *Wire.*

Broilers—

Wire Goods Co.....75@75&10%

Buckets, Well and Fire—See *Pails*

Bucks, Saw—

Hoosier.....₱ gro. $22.00@$24.00

Bull Rings—See *Rings, Bull.*

Butts—Brass—

Wrought list Sept., '96.....40¢5@50%
Cast Brass, Tiebout's.....50%

Cast Iron—

Fast Joint, Broad..... 60@60¢10%
Fast Joint, Narrow.. .....60¢10@60¢10&10%
Loose Joint.....
Loose Pin.....
Mayer's Hinges..... } *75@75¢10%*
Parliament Butts.....

Wrought Steel—

Loose Joint.....
Table and Back Flaps..
Narrow and Broad..... } *75@75¢5%*
Inside Blind .....
Loose Pin.....
Loose Pin, Ball and Steeple Tip....80@80&5%
Bronzed Wrought Narrow and Inside Blind Butts.....50&10@50&10&5%

Cages, Bird—

Hendryx, Brass:
3000, 5000, 1100 series.....10%
1200 series.....40%
200, 300, 600 and 900 series.40&10@50%
Hendryx Bronze:
700, 800 series.....40&10@50%
Hendryx Enameled.....40&10@50%

Calipers—See *Compasses.*

Calks, Toe—

Burke's, One Prong, Blunt.....4@4½¢
Burke's, One Prong, Sharp.....5@5½¢
Burke's, Two Prong, Blunt.....5@5½¢
Burke's, Two Prong, Sharp.....6@6½¢
Gautier, One Prong, Blunt.....5½@6¢

Can Openers—See *Openers, Can*

Cans, Milk—

Buffalo Pattern:

	5	8	10 gal.
Concave Cover.....	$1.25	$2.00	$2.20
Convex Cover.....	1.40	2.15	2.35
Illinois Pattern.....	....	1.80	2.00
Iowa Pattern.....	...	1.75	1.90
New York Pattern...	...	2.25	2.45
Baltimore Pattern....	....	2.35	2.55

Cans, Oil—

Galvanized Blue Band, 1-gal., ₱ doz. $1.60@$1.80
S. S. & Co., Galvanized Family with faucet, 3-gal., ₱ gro. $54, 5-gal., $60; 10-gal., $180.00
Glass Oil.....₱ doz. $1.60@$1.85

Caps—Percussion—

Eley's E. B.....50c
G. D.....per M 32@35c
F. L.....per M 37@40c
G. E.....per M 47@50c
Musket.....per M 57@60c

Primers—
Berdan Primers, $1.00 ..... 2%
B. L. Caps (Sturtevant Shells) $1.00 ..... 2%
All other primers.....*$1.00@$1.10*

Carpet Stretchers—
See *Stretchers, Carpet.*

Cartridges—
B. B. Caps, Con., Ball Swgd.....*$1.90*
B. B. Caps, Round Ball... *$1.12@1.18*
Blank Cartridges:
32 C. F., $5 50..... 2%
38 C. F., $7 00 ..... 2%
22 cal. Rim, $1.50..... 2%
32 cal. Rim, $2.75..... 2%
Central Fire ..... 15&5&2%
Pistol and Rifle..... 25&5&2%
Primed Shells and Bullets...15&5&2%
Rim Fire Sporting..... 50&2%
Rim Fire, Military..... 15&5&2%

Casters—
Bed..... 70&5@70&10%
Plate..... 60@60&10%
Plate, part Brass 60%
Philadelphia..... 70&5@70&10%
Martin's Patent (Phœnix) ....60@60&5%
Payson's Anti-friction Furniture..... 70&10&5%
Payson's Anti-Friction Truck.60&10&5%
Standard Ball Bearing..... 50%
Tucker's Patent, low list.....50@50&5%

Cattle Leaders—
See *Leaders, Cattle.*

Chain—
American Coil, Cask Lots:

3-16	¼	5-16	⅜	7-16	½	9-16
$7.75	6.00	5.00	4.25	4.10	4.00	3.90
⅝	¾	⅞	1 inch.			
$3.80	3.75	3.65	3.65			

Less than Cask lots add 1-10c. per lb.
German Coil, list July 24, '97 ..... 60&10@60&10&10%
German Halter Chain, list July 24, '97..... 60&10@60&10&10%
Trace, Wagon and Fancy Chains, list April, '98..... 60@60&10%
Jack Chain, list July 10, '93:
Iron..... 70@70&10%
Brass ..... 50&10@60%
Gal. Pump Chain..... lb 4½@4¾c
Breast, Hitching and Rein Chains
Covert Sad. Works..... 70%
Covert Mfg. Co.:
Breast..... 45&2%
Halter..... 45&2%
Heel..... 45&2%
Rein..... 45&2%
Stallion..... 45&2%
Oneida Community:
Niagara and Eureka Weldless Coil and Halters..... 65@65&10%
Niagara and Eureka Weldless Cow Ties..... 55&5@60%
American Coil and Halters..55&5@60%
American Cow Ties..... 50@50&10%

Chalk—(From Jobbers.)
Carpenters', Blue.....*gro. 50@58c*
Carpenters', Red .....*gro. 45@47c*
Carpenters', White.....*gro. 40@42c*
See also Crayons.

Chalk Lines—See *Lines.*

Checks, Door—
Bardsley's..... 40%
Columbia..... 50&10%
Eclipse..... 60@60&10%

Chisels—
Socket Framing and Firmer
Standard List.....*75&5@75&10&5%*
Buck Bros..... 30%
Charles Buck..... 30%
S au'e..... 75@75&5&2½%
L. & I. J. White..... 30@30&5%

Tanged—
Tanged Firmers..... 40&10@50%
Buck Bros..... 30%
Charles Buck..... 30%
L. & I. J. White, Tanged..... 40&5%

Cold—
Cold Chisels, good quality.lb. 14@16c
Cold Chisels, fair quality..... *lb. 12c*
Cold Chisels, ordinary.....*lb. 7@7½c*

Chucks—
Beach Pat., each $8.00..... 20%
Morse's Adjustable, each $7.00. ..... 25%
Skinner Patent Chucks:
Combination Lathe Chucks..... 40%
Drill Chucks..... 30%
Independent Lathe Chucks..... 40%
Improved Planer Chucks..... 20%
Universal Lathe Chucks..... 40%
Union Mfg. Co.:
Combination..... 40%
Czar Drill..... 30%
Geared Scroll..... 33⅓%
Independent..... 40%
Union Drill..... 30%
Universal..... 40%
Face Plate Jaws..... 35%

Clamps—
Adjustable, Hammers'.....20@20&5%
Adjustable, Stearns'.....30@30&10%
Cabinet, Sargen. .....45&10%50&10%
Carriage Makers', P., S. & W. Co..40&10%
Carriage Makers', Sargent's..... 50&10@50&10&5%
Besly, Parallel..... 33⅓%
R. I. Tool Co.'s Wrought Iron..... 25%
Saw Clamps, see *Vises, Saw Filers'.*
Stearns Malleable, with Wrought Iron Screw ..... 75@75&5%
Stearns Steel..... 25&10%
U. S. Lock Co..... 40&10@40&10&5%

Cleaners, Walk—
Star Socket, All Steel....₱ doz. $4.00 net
Star Shank, All Steel....₱ doz. $3.75 net

Cleavers, Butchers'—
Foster Bros..Flat Hds., 30%; Rd.Hds., 40%
New Haven Edge Tool Co.'s..... 40%
Nichols Bros., Flat hdl., 30%; Rd. hdl., 40%
Fayette R. Plumb..... 33⅓&5&7½%
P., S. & W. ..... 33⅓&5@33⅓&10%
L. & I. J. White..... 25%

Clippers—
Chicago Flexible Shaft Company:
Handy Toilet..... ₱ doz. $7.20
Mascotte Toilet..... ₱ doz. $8.40
Monitor Toilet..... ₱ doz. $9.00
Stewart's Patent..... ₱ doz. $10.00

Clips, Axle—
Eagle and Superior ¼ and 5-16 inch..... .....*70&5@70&10%*
Norway, ¼ and 5-16 inch.....*70&5%*

Cloth and Netting, Wire
—*See Wire, &c.*

Cocks, Brass—
Hardware list (Globe, Kerosene, Lever Bibbs, Racking, &c.)..... *70@70&5%*

Coffee Mills—See *Mills, Coffee.*

Collars, Dog—
Brass, Pope & Stevens' list..... 40%
Embossed,Gilt,Pope&Stevens'list30&10%
Leather, Pope & Stevens' list..... 40%

Compasses, Dividers, &c.
Ordinary Goods. .....*70&10@75%*
Bemis & Call Hdw. & Tool Co.:
Dividers..... 65%
Calipers, Cali's Patent Inside..... 55%
Calipers, Double..... 70%
Calipers, Inside or Outside..... 70%
Calipers, Wing..... 60%
Compasses..... 50&5%
J. Stevens A. & T. Co..... 25&10%

Coolers, Water—
S. S. & Co.: 2-gal., $2.79; 3-gal., $3.20; 4-gal., $3.60; 6-gal., $4.75; 8-gal., $7.20; 11-gal., $11; 14-gal., $14 each 60%

Coopers' Tools—
See *Tools, Coopers'.*

Cord— Sash—
Braided, Drab..... *lb. 21@23c*
Braided, White, lb..... *15@20c*
Cable Laid Italian..lb. A, 18c; B, 16c
Common India..... *lb. 8½@9c*
Cotton Sash Cord, Twisted....*10@15c*
Patent Russia ..... *lb. 12 @13c*
Cable Laid Russia.....*lb. 13½@14c*
India Hemp, Braided.....*lb. 14@15c*
India Hemp..... *lb. 9@10c*
Patent India. ..... *lb. 10 c*
Pearl Braided, cotton ..... ₱ lb 16¢
Massachusetts, White ..... ₱ lb 17¢
Eddystone Braided Cotton..... ₱ lb 18¢
Harmony Cable Laid Italian..... ₱ lb 18¢
Ostwan Mills:
Crown, Solid Braided White...₱ lb 18¢
Braided, Giant, White..... ₱ lb 16¢
Peerless:
Cable Laid Italian..... 16¢
Cable Laid Russian..... 13¢
Cable Laid India..... 11¢
Braided India..... 18¢
Samson:
Braided, Drab Cotton.....₱ lb 33@35¢
Braided, Italian Hemp.....₱ lb 31@33¢
Braided, Linen..... ₱ lb 53@56¢
Braided, White Cotton.....₱ lb 27@30¢
Silver Lake:
A quality, Drab, 40¢..... 15&10%
A quality, White, 35¢..... 15&10%
B quality, Drab, 35¢..... 15&10%
B quality, White, 30¢..... 15&10%
Italian Hemp, 40¢ ..... 15&10%
Linen, 57½¢..... 15&10%

Wire, Picture—
Braided or Twisted .....*85@85&10%*

Corn Knives and Cutters
—See *Knives, Corn.*

Crackers, Nut—
Acme, Japanned, ₱ gr. $30..... 40%
Acme, Nickel Plated, ₱ gr. $30..... 20¢
Turner & Seymour Mfg. Co..... 50%

Cradles—
Grain..... *55%*

Crayons—
White Round Crayons, gross...5@6c
Cases, 100 gro., $4.50@$5 00, at factory.
D. M. Steward Mfg. Co.:
Metal Workers', ₱ gr. $2.50.....20@25%
Railroad, ₱ gr. $2.00..... 20@25%
Rolling Mill, ₱ gr. $2.50 ..... 20@25%
Soapstone Pencils, ₱ gr. $1.50..20@25%
See also *Chalk.*

Creamery Pails—See *Pails, Creamery.*

Crooks, Shepherds'—
Fort Madison, Heavy ..... ₱ doz. $7.00
Fort Madison, Light..... ₱ doz. $6.50

Crow Bars—See *Bars, Crow.*

Cultivators—
Victor Garden ..... ₱ doz. $10.00

Curry Combs—
See *Combs, Curry.*

Cutters— Meat—
American..... 30%

Nos.....	1	2	3	4	5
Each.....	$5	$7	$10	$25	$50	$80

Connecticut:

No.....	0	1	8	10	12
Each.....	$1.75	2.25	3.00	3.00	3.50

Enterprise..... 25@25&7½%

Nos.....	5	10	12	22	32
Each.....	$2	$3	$2.50	$4	$6

Dixon's, ₱ doz..... 33⅓%

Nos..	1	2	3	4
	$14.00	$17.00	$19.00	$30.00

Hale's, ₱ doz..... 70@70&5%

Nos.....	11	12	13
	$27.00	$33.00	$45.00

Home No. 1, ₱ doz. $36.00..... 60%
Little Giant, ₱ doz..... 50&10%

Nos. 305	310	312	320	322
	$35.00	$43.00	$44.00	$71.00	$88.00

Miles' Challenge, ₱ doz.....45@45&10%

Nos.....	1	2	3
	$22.00	$30.00	$40.00

New Triumph No. 605, ₱ doz. $24.00.. 33⅓&5%
Woodruff's, ₱ doz ..... 33⅓&5%

Nos.....	100	150
	$15.00	$18.00

Chadborn's Smoked Beef Cutter, ₱ doz. $60.00
Enterprise Beef Shavers..... 25@30%

Slaw and Kraut—
Henry Diss on & Son:
Slaw, C rn Grater, &c..... 40%
Kraut Cutters 24 x 7, 26 x 8, 30 x 9.55%
Kraut Cutters 36 x 12, 40 x 12..... 40%
Tucker & Dorsey Mfg. Co.:
Kraut Cutters..... 50@50&10%
Slaw Cutters, 1 Knife, ₱ gr...$15@$18
Slaw Cutters, 2 Knife, ₱ gr...$20@$27

Tobacco—
All Iron, Cheap.....*doz. $4.50@$5 00*
Enterprise..... 25@30%
National, ₱ doz. $21.00..... 30&5%
Sargent's, ₱ doz. $24.00..... 60@60&10%

Washer—
Appleton's, ₱ doz. $16.00..... 60&10@60&10&10%
Bonney's..... ₱ doz. $4.25

Diggers, Post Hole, &c.—
Iwan's Improved Post Hole Auger.40&5%
Iwan's Perfection Post Hole Digger.... ₱ doz. $10.00
Samson, ₱ doz. $34.00 ..... 25%

Dividers—See *Compasses.*

Dog Collars—See *Collars, Dog.*

Door Checks—
See *Checks, Door.*

Door Springs—
See *Springs, Door.*

Drawers, Money—
Tucker's Pat. Alarm Till No. 1, ₱ doz. $18; No. 2, $12; No. 3, $11; No. 4, $12.

Drawing Knives—
See *Knives, Drawing.*

Drills and Drill Stocks—
Common Blacksmiths' Drill..each $1.50
Blacksmiths' Self-feeding.....*each $5.00@6.00*
Bench Drills, Stearns'..... 50@50&10%
Breast, Millers Falls, each $3.00 ..... 25%
Breast, P., S. & W..... 40&10%
Goodell Automatic Drills..40&5@40&10%
Ratchet, Bignall & Keeler..... 30&5%
Ratchet, Curtis & Curtis 25%
Ratchet, Ingersoll's..... 25%
Ratchet, Parker's..... 40%
Ratchet, Weston's..... 20@25%
Ratchet, Whitney's..... 20&10%
Whitney's Hand Drill, No. 1, $10.00: Adjustable, No. 10, $12.00..... 33⅓%

Twist Drills—
Standard List.....*60&10&10@70&5%*

Drill Bits or Bit Stock Drills—See *Augers and Bits.*

Drill Chucks—See *Chucks.*

Dripping Pans—
See *Pans, Dripping.*

Drivers, Screw—
Balsey's Screw Holder and Driver, ₱ doz. 2½-inch, $6; 4-in., $7.50 6-in., $9..40%
Buck Bros..... 30%
Buck Bros' Screw Driver Bits..... 27½%
Champion..... 40&10%
Douglass Mfg. Co..... 20@20&10%
Electric Spiral..... 50&10&10&5%
Ellrich's Socket..... 40&10%
Fray's Hol. H'dle Sets, No. 3, $12.00 50%
Gay & Parsons' Ratchet..... 35%
Goodell's Automatic ..... 50&10&10@50&10&10&5%
Howard-Allard Spiral.....50&10&10&5%
Jones Reversible..... 50%
Mayhew's Black Handle..... 50%
Mayhew's Monarch..... 45&10%
New England Specialty Co..... 50&10%
New York, Manhattan and Handy...20%
Sargent & Co.'s:
Nos. 1, 20, 40 and 60.50&10@50&10&5%
Nos. 50 and 55.....50&10&10@60&5%
Screw Driver Bits..... ₱ doz. 50@70¢
Stanley's R. & L. Co.'s:
No. 64, Varnished Handles..... 70&10%
No. 86..... 75&10%

Egg Beaters—See *Beaters, Egg.*

Emery—*Nos. 4 to 54 to Flour, CF:*

	46 gro.	*180 gro.*	*F.FF.*
Kegs.....	*lb. 4¾c*	*5 c.*	*3 c*
⅛ Kegs ....*lb. 4¾c*		*5¼c*	*3¼c*
¼ Kegs ....*lb. 5 c*		*5½c*	*3½c*
10-lb cans, 10 in case.....	*6 c*	*6¼c*	*5¼c*
10-lb. cans, less than 10.....	*10 c*	*10 c*	*8c*

Enameled and Tinned Ware—See *Ware, Hollow.*

Escutcheon Pins—
See *Pins, Escutcheon.*

Extractors, Lemon Juice
—See *Squeezers, Lemon.*

Fasteners, Blind—
Zimmerman's..... 50&10%

Faucets—
Cork Lined..... *70c&5@70c&10c&5%*
Metallic Key, Leather Lined..... *65c&10@70%*
Red Cedar ..... *50@50c10%*
B. & L. B. Co.:
West's Lock, Open and Shut Key50&10%
John Sommer's Peerless Tin Key.....40%
John Sommer's Boss Tin Key..... 50%
John Sommer's No Brand Metal Key.60%
John Sommer's W. P. Metal Key.....40%
John Sommer's Diamond Lock..... 40%
John Sommer's I. X. L. Cork Lined..50%
John Sommer's Reliable Cork Lined.60%
John Sommer's Common Cork Lined.70%
John Sommer's Chicago Cork Lined..60%
John Sommer's O. K. Cork Lined.....50%
John Sommer's Perfection Cedar..... 40%
Star..... 60@60&5%
Star, Metal Plug, new list.....40@40&5%
Stearns' Wood, No. 200, Wood-lined Key..... 50&10%
Stearns' Matchless, Wood, No. 300...60%
Stearns' Gem, Wood, No. 400.....60&10%
Lockport, Metal Plug, reduced list.60&5%
Self Measuring:
Enterprise, ₱ doz. $36.00..... 40%
Lane's, ₱ doz. $36.00..... 33⅓%
National Measuring, ₱ doz. $36.00.33⅓%

Felloe Plates—
See *Plates, Felloe.*

Files—Domestic—
List revised June 1, 1899.
Best Brands.....*70@70c10c10%*
Good Brands..... *75c10@80c5%*
Fair Brands ..... *80c5@80c10%*
Second Quality..... *80c10@85%*

Imported—
Stubs' Tapers, Stubs' list, July 24, '97 ..... 25%

Fixtures, Grindstone—
Net Prices:

Inch....	*15*	*17*	*19*	*21*	*24*
Per doz.	*$2.50*	*2 60*	*2.95*	*3.35*	*4.50*

Stowell's Grant Grindstone Hanger.... ₱ doz. $6.00@7.00
Stowell's Grindstone Fixtures.....55&10%
P., S. & W. Co..... 50&10&10%
Reading Hardware Co..... 30&20&10%
Sargent's Patent.....70&10@70&10&10%

Fluting Machines—
See *Machines, Fluting.*

Fodder Squeezers—
See *Squeezers, Fodder.*

Forks—
Old, or 1895 list.
Hay, Manure, &c.60&10@60&10&5%
1898, or High list.
Hay, 2 tine..... ..... *70&2%*
Hay, 3 tine ..... *70&2%*
Manure, 4 tine ..... *66⅔&20&2%*
Manure, 5 and 6 tine.....*70&10&2%*
Spading..... ..... *70&15&2%*
Victor, Hay..... ..60&33⅓&2½&2%
Victor, Manure..... ..... 75&5&2%
Victor, Header..... 70&12½&2%
Champion, Hay..... 70&10&2%
Champion, Manure..... 75&2%
Columbia, Hay..... 70&7½&2%
Columbia, Manure..... 75&5&2%
Columbia, Spading ..... 66⅔&25&2%
Hawkeye Wood Barley 4 tine ₱ doz $5.00; 6 tine, $5.50.
Plated.—See *Spoons.*

1898 or high list

Frames—
Saw—
Red, Polished and Varnished..doz. $1.00@$1 10
White.....*gro. $3.25@$3.50*

Screens, Window and Door—
Bonanza Window Screens.....60@60&5%
Phillips' Window Screen Frames..60&5%
Porter's Extension Window Screens.. 60&5%
Stearns' Frames and Corners 25@25&10%
Stearns' Monarch Adjustable Window Screens..... 50%
Stearns' Gem Window Screen Frames. 25&10%
Wabash Adj. Window Screen..... 50%
Warner's Screen Corner Irons..33⅓&10%

Freezers, Ice Cream—

Qts...	*2*	*3*	*4*	*6*	*8*	*10*
Best.	*$1.40*	*1.60*	*1.85*	*2.30*	*3.00*	*3.90*
Good	*$1 25*	*1.35*	*1.70*	*2 05*	*2.65*	*3.50*
Fair.	*$1.00*	*1.10*	*1 30*	*1.75*	*2.30*	*2.90*

Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

Fry Pans—See *Pans, Fry.*

Fuse—
Per 1000 Feet.
Hemp Fuse *$2.60*
Cotton Fuse..... *2.90*
Single Taped Fuse..... *3.50*
Double Taped Fuse..... *4.70*
Triple Taped Fuse..... *5.70*

10%

Gates, Molasses and Oil—
Stebbin's..... *80&20@85%*
Stearns' Molasses and Oil.....30&10%

Gauges—
Marking, Mortise, &c..... *60c&10@60c&10c10%*
Barrett's Comb. Roller Gauge.... ₱ doz. $6.75@7.25
Stanley R. & L. Co.'s Butt & Rabbet Gauge..... 25&10%
Wire, Brown & Sharpe's..... 25%
Wire, Morse's..... 25%
Wire, P., S. & W. Co..... 10&10%

Gimlets—

Nail, Metal, Assorted ..gro $1.50@2.00
Spike, Metal, Assorted gro. $3.25@3 75
Nail, Wood Handled, Assorted. gro. $4.00@4 50
Spike, Wood Handled, Assorted gro. $5 00@5.25

Glass, American Window

List Jan. 1, 1898.

Small lots from store:
Eastern....80d20%
Western....80d20@85d5%
From Factory, with Frt. Allowance:
Carloads....80d20%
1000 boxes or more, Gulf Ports....85d10%
3000 boxes or more....85@85d2½%
5000 boxes or more....85d5%

Glue—Liquid, Fish—

List A, Bottles or Cans, with Brush. 37½@50%
List B, Cans (½ pts., pts., qts.).... 33½@48%
List C, Cans (½ gal., gal.)....25@45%

Glue Pots—See *Pots, Glue.*

Grease, Axle—

Allerton's Axle:
1 lb Tins, ₱ gr....$9.00
8 lb Tin Pails, ₱ doz., $2.00; 5 lb, $3.00; 10 lb, $6.00.
25 lb wood pails....₱ doz. $12.00
Dixon's Everlasting....10-lb pails, ea. 85¢
Dixon's Everlasting, in bxs..₱ doz. 1 lb $1.20; 2 lb $2.00
Lower grades, special brands, ₱ gr. $5.00@6.50

Grindstone Fixtures—

See *Fixtures, Grindstone.*

Gun Powder—See *Powder.*

Hack Saws—See *Saws.*

Hafts, Awl—

Peg Patent, Leather Top...gro. $4.90
Peg Patent, Plain Top.....gro. $3.45
Sewing, Brass Ferrule..gro $1 50
Saddlers', Brass Ferrule...gro. $1 35
Peg, Common.....gro $1.25
Brad, Common.....gro. $1.35

Halters and Ties—

Covert Mfg. Co., Web and Rope...45&2%
Covert's Saddlery Works', 96 list.....70%

Hammers—

Handled Hammers—

Heller's Machinists'.....40@40&5%
Magnetic Tack, Nos. 1, 2, 3, $1.25, $1.50, $1.75.....40&10%
Peck, Stow & Wilcox.....40@40&5%
Fayette R. Plumb:
Artisans' Choice, A. E. Nail...40&12½%
Engineers' and B. S. Hand.....60%
Machinists' Hammers.....60%
A. E. & A. E., Bell Face Nail....40&12½%
Other Nail Hammers.....50%
Sargent's C. S. New List.....45@50%

Heavy Hammers and Sledges—

3 lb. and under...lb. 45c
3 to 5 lb.....lb. 36c
Over 5 lb.....lb. 30c
} 75d10d5@ 80d5%

Note.—Lower net prices sometimes made by jobbers.
Wilkinson's Smiths'.....9½c@10c lb.

Handcuffs and Leg Irons

See *Police Goods.*

Handles—

Agricultural Tool Handles—

Hoe, Rake, Fork, &c.,60d10@60d10d5%
Shovel, &c., Wood D Handle...60d10%

Cross-Cut Saw Handles—

Atkins'.....40%
Champion.....45@45&10%
Disston's.....50%
Ely's Perfection.....₱ doz. $3.00

Mechanics' Tool Handles—

Auger, assorted.....gro. $2.25@$3 50
Auger, large.....gro. $2 75@$3 00
Brad Awl.....gro. $1.40@$1 50
Chisel Handles:
Apple Firmer, gro ass'd. $2.25@ $2 50; large, $2.75@$3.00.
Hickory Firmer, gro ass'd, $2.25 @$2.50; large, $2 50@$2.75.
Socket, gro. ass'd, Firmer, $1.50@ $1.60; Framing, $2 50@$2 75.
File, assorted..... gro. $1 00@$1 15
Hammer, Hatchet, Axe, &c...50d10%
Hoe, Rake and Fork.....60d10@60d10d5%
Shovel and Spade, Wood D H'dle..60d1%
Hand Saw, Varnished, doz. 75@80c
Not Varnished.....55@60c
Plane Handles:
Jack, doz. 23@25c; Jack Bolted..55@60c
Fore, doz. 35@38c; Fore, Bolted..70@75c

Hangers—

Barn Door, New Pattern, Round Groove, Regular:

Inch	3	4	5	6	8
Doz	$1.28	1.68	2.16	2.64	3.30

Barn Door, New England Pattern, Check Back, Round Groove, Regular:

Inch	3	4	5	6
Doz	$2.86	3.74	4 84	6.16

Bigelow & Dowse Co.:
Paragon, No. 1, $3.50; No. 2, $4.50; No. 3, $5.50 ₱ doz.
Chicago Spring Butt Co.:
Friction.....35@35&10%
Oscillating.....35@35&10%
Big Twin.....35@35&10%
Chisholm & Moore Mfg. Co.:
Advance.....60&10%
Cleveland.....60&10%
Baggage Car Door.....50%
Elevator.....40%
Railroad.....55%
Lane Bros.:
Parlor, Standard.....40&10%
Barn Door, Standard.....60&10%
Covered.....60&10%
Cycle, ₱ doz. $12.00.....33⅓&5%
No. 50.....60&5%
Parlor Door, New Model.....40&5%
Lawrence Bros.:
Crown.....60&10%
New York.....60&10@60&10&5%
Sterling.....60&10%
McKinney Mfg. Co.:
No. 2, Standard, $18.....60&10%
No. 1, Special, $13.....60&10%
E. C. Stearns & Co.:
Davis Parlor Door.....50@50&5%
Gem Parlor Sliding Door....50&10%
Challenge.....50@50&5%
Steel Single Track Parlor, $6....50%
Royal Parlor Door.....50%
Warner's Pat.....30&10&10%
Warner's Imp'd Single.....40&10%
Stowell Mfg. and Foundry Co.:
Badger.....60&10%
Baggage Car Door.....33⅓%
Climax Anti-Friction.....55&5%
Elevator.....40%
Interstate.....60&15%
Magic.....50&10%
Matchless.....60&10%
Nansen.....60&10%
Parlor Door.....50&10%
Railroad.....55&5%
Street Car Door.....50&10%
Steel, Nos. 300, 400, 500.....45&15%
Wild West.....50&5%
Zenith for Wood Track.....55&5%
Taylor & Boggis Foundry Co.:
Kidder's.....50@50&10%
Van Wagoner & Williams Hdw Co.:
American Trackless.....33⅓&10%
Wilcox Mfg. Co.:
Aurora Steel Endless.....60%
Bike Roller Bearing....60&10&10%
Bike Steel Endless.....60&10&10%
C. J. Roller Bearing.....60&10&10%
Cycle Ball Bearing.....50&10%
Dye Steel.....60&10%
Economical Single Track.50&10&5%
L. T. Roller Bearing.....70%
New Era.....50&10%
New Richards.....60%
O. K. Roller Bearing.....70%
Prindle Improved.....60&10%
Richards' Improved.....60&10%
Richards' Single Track.....50&10%
Wilcox Dwarf Roller Bearing.....40&10%
Wilcox-Ives.....60&10%
Wilcox Tandem Roller Bearing.....60&10%
Wilcox Trolley Ball Bearing.....40&10%
Wilcox Trolley Roller Bearing..50%
Wilcox Trolley Roller Bearing, Fire.....40&10%
Wood Track.....60%

Extra 50&10% often given.

Harness Menders—See *Menders.*

Harness Snaps—See *Snaps.*

Hasps—

McKinney's Perfect Hasp, ₱ doz. $1.10 40&10%
Wrought Hasps, Staples, &c.—See *Wrought Goods.*

Hatchets—

Best Brands.....40d12½%50d5%
Cheaper Brands.....50d10@60d5%
Note.—Net prices often made.

Hay and Straw Knives—

See *Knives.*

Hinges—

Blind Hinges—

Lull & Porter:

No.	1	1½	2	2½
Doz. pair	$0 47	.43	.40	.35

1868 Old Pattern:

No.	1	3	5
Doz. pair	$0.55	1.00	2.00

Parker.....75&10@75&10&5%
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 8, for Brick, $11.50.....10%
Reading's Gravity.....75&10%
Sargent's, Nos. 1, 3, 5, 11, 13..75@75&10%
Wrightsville H'dware Co.:
Acme, Lull & Porter.....80&10%
Buffalo Gravity Locking, Nos. 1, 3 and 5.....80&10&5%
Champion Gravity Locking, No. 75.....80&10&10%
1868, Old Pat'n, Nos. 1, 3 & 5...80&10%
Tip Pattern, Nos. 1, 3 and 5..80&10&5%
Double Locking, Nos. 20 and 25....75%
Empire, Nos. 101 and 103.....80%
Niagara Gravity Locking, Nos. 1, 3 and 5.....80&10%
Noiseless, Nos. 50, 60, 65 and 55....80%
O. S. Lull & Porter.....80&10&5%
Pioneer, Nos. 060, 45 and 5½....75&5%
Steamboat Gravity Locking, No. 10..80&10&5%
Stanley's Steel Gravity Blind Hinges, ₱ doz. sets $1.30.....40&10%

Gate Hinges—

Clark's or Shepard's—Doz. sets:

No.	1	2	3
Hinges with Latches.	$1.40	1.75	2.25
Hinges only.....	0.92	1.40	2.40
Latches only.....	0.46	.48	.80

New England:
With Latch.....doz. $1.45@1 50
Without Latch.....doz. $1.30@1.35
Reversible Self-Closing:
With Latch.....doz. $1.70@1.75
Without Latch.....doz. $1.50@1.55
Western:
With Latch.....doz. $1.75@1.80
Without Latch.....$0.75@$0 78

Spring Hinges—

Holdback, Cast Iron.....
gro. $6.50@$6.75
Non-Holdback, Cast Iron.....
gro. $5.50@$5.75

J. Bardsley:
Bardsley's Patent Checking.....15%
Bommer Bros.:
Bommer's.....40%
Chicago Spring Butt Co.:
Chicago.....30%
Garden City Engine House.....30%
Keene's Saloon Door.....30%
Lawson Mfg. Co.:
Matchless.....25%
Matchless Pivot.....40%
Payson Mfg. Co.:
Oblique, Dbl. Acting.....50@50&5%
E. C. Stearns & Co.:
Nos. 45 and 51.....70%
Stover Mfg. Co.:
Ideal, No. 16, Detachable, ₱ gr. $12.50
Ideal, No. 4.....₱ gr. $9.00
New Idea No. 1.....₱ gr. $9.00
New Idea, Double Acting.....45%
Van Wagoner & Williams Hdw. Co.:
Acme.....30&5%
American.....30%
Columbia, No. 14.....₱ gr. $8.00
Columbia, No. 18.....₱ gr. $24.00
Crown.....30%
Gem.....30%
Knoxall.....₱ gr. $9.00
Oxford.....30%

Extra 10% often given on most of these Hinges.

Wrought Iron Hinges—

Strap and T Hinges, &c., list Mar. 15, 1898:
Light Strap Hinges....70d10%
Heavy Strap Hinges....75d5%
Light T Hinges.....65%
Heavy T Hinges.....70%
*Extra Heavy T Hinges*70d10%
} Extra 50&10&5

Rolled Plate.....70@70d10%
Screw Hook and Strap.
6 to 12 in..lb 3¼@3½c
14 to 20 in..lb. 3 @3½c
22 to 36 in..lb. 2.75@3 c

Hoes—

Eye—

Scovil and Oval Pattern..60@60d10%
Grub, list Feb. 23, 1899....70d10@75%
D. & H. Scovil.....35@35&5%

Handled—

1895 or Old List:
Cotton, Field, Planters', &c.....
60d10@60d10&5%
1898 or High List:
Field and Garden.....60d10d5d2%
Ladies', Boys', Toy and Onion.....
75d12½d2%
Street and Mortar.....75d15d2%
Cotton.....75d10d2½d2%
Planters'.....75d16⅔&2%
Weeding.....75d10d5d2%
Note.—Manufacturers and jobbers use a diversity of lists, and often sell at net prices.
Ft. Madison Crucible Garden Hoe.....
75&10&2%
Ft. Madison Crescent Cultivator Hoe, per doz.....$3.75
Ft. Madison Mattock Hoe, ₱ doz....$1.00
Ft. Madison Sprouting Hoe, ₱ doz..$4.50
Ft. Madison Dixie Tobacco Hoe.....
75&10&2%
Kretsinger's Cut Easy, per doz.....$4.50
Warren Hoe.....60&10%

Hog Rings and Ringers—

See *Rings and Ringers.*

Hoisting Apparatus—

See *Machines, Hoisting.*

Hollow Ware—

See *Ware, Hollow.*

Holders—

Bit—

Angular, ₱ doz. $24.00.....45&10%

File and Tool—

Nicholson File Holders and File Handles.....35&4%

Hooks—

Cast Iron—

Bird Cage, Reading.....
Bird Cage, Sargent's List..
Clothes Line, Sargent's List...50@50&5%
Ceiling, Sargent's List.....50@50&5%
Clothes Line, Stowell's.....70&5%
Clothes Line, Reading List
65&10@65&10&10%
Coat and Hat, Stowell's.....70&5%
Coat and Hat, Reading.....70@75%
Coat and Hat, Sargent's List.....50&10%
Coat and Hat, Wrightsville list..70&10%
Harness, Reading List.....70&10@75%
} 66⅔@70%

Wire—

Belt.....80&10@80&80%
Atlas, Coat and Hat.....50@50&10%
Wire Coat and Hat:
Acme.....60@60&5%
B. B.....70@70&5%
Gem.....66⅔%
Bright Wire Goods—See *Wire.*

Wrought Iron—

Box, or Case, Octagon Steel.....
doz. $2.00@2.15
Cotton.....doz. $1.00@1.10
Picture, T. & S. Mfg. Co.....75%
Tassel, T. & S. Mfg. Co.....50&10%
Wrought Staples, Hooks, &c.—See *Wrought Goods.*

Miscellaneous—

Bush, Light, doz. $5.00; Medium, $5.50; Heavy, $6 00

Grass.....*Nos.*	1	2	3	4
Best.....	$1.60	1.75	2 00	
Common.....	$1.50	1.50	1.50	1.75
Potato and Manure.....	75d15%			

Whiffletree.....lb. 4½c
Hooks and Eyes:
Brass.....70d10@75%
Malleable Iron.....75d10%
Covert Saddlery Works' Self Locking Gate and Door Hook, 4 in. ₱ gross $13.00; 6 in. $17.20.....70%
Crown Picture.....60%
Bench Hooks—See *Bench Stops.*
Corn Hooks—See *Knives, Corn.*

Horse Nails—See *Nails, Horse.*

Horseshoes—

See *Shoes, Horse.*

Hose, Rubber—

Garden Hose, ¾-inch:
Competition.....ft. 4½@ 5½c
3-ply Standard.....ft. 5½@ 6 c
4-ply Standard.....ft. 6½@ 6½c
3-ply extra.....ft. 6½@ 7½c
4-ply extra.....ft. 7½@ 8½c
High Grade.....ft. 9 @11 c
Cotton Garden, ¾-in., coupled:
Low Grade.....ft. 5½@6c
Fair quality.....ft. 7 c
Good quality.....ft. 8 @ 8½c

Irons—

Sad—

From 4 to 10.....lb. 2½@3½c
B. B. Sad Irons.....lb. 3½c
Chinese Laundry.....lb. 4½@4½c
Chinese Sad.....lb. 3½@3½c
Mrs. Potts', per set:

Nos.	50	55	60	65
	66@77c	61@78c	72@81c	66@76c

New England Pressing.....lb. 3c

Soldering—

Soldering Coppers.....lb. 23@26c
Covert Mfg. Co.....35&2%

Pinking—

Pinking Irons.....doz. 50@60c

Jack Screws—See *Screws.*

Jacks, Wagon—

Covert Mfg. Co., Steel.....45&2%
Daisy, ₱ doz. $12.00.....70%
Lockport.....40@40&10%
Victor, ₱ doz. $20.00.....70%
Lane's Steel.....30%

Kettles—

Brass, Spun, Plain, list Jan. 10, '99 15@20%
Enameled and Tea—See *Ware, Hollow.*

Knife Sharpeners—

See *Sharpeners, Knife.*

Knives—

Butcher, Shoe, &c.—

Dick's Butcher Knives.....40%
Foster Bros.' Butcher, &c.....40%
Nichols' Butcher Knives.....50%
Table and Pocket Cutlery and John Wilson's Butcher Knives—Net prices.
Hay and Straw—See *Hay Knives.*

Corn—

Ft. Madison Cut-Easy, ₱ doz.....$3.25

Drawing—

Standard List.....75&5@75&10d5%
Adjustable Handle.....25@33⅓%
Bradley's.....35%
Swan's.....75@75&5&2½%
Watrous.....30&10@40%
L. & I. J. White.....20&5@25%
Cautelo's Folding.....50@50&5%

Hay and Straw—

Blizzard.....$5.50@6.00
Iwan's Sickle Edge.....₱ doz. $10.50
Lightning, from Jobbers.....$5.00@6.00

Mincing—

Buffalo Adjustable, ₱ doz. $3.00.....40%
Smith's, ₱ doz., Single, $2; Double, $3 45@50%

Miscellaneous—

Farriers'.....doz. $2 00@3 00
Wostenholm's.....₱ doz. $3.00@3 25

Knobs—

Base, 2¼-inch, Birch, Rubber tip, gro.....$1.25@1.30
Carriage, Jap. all sizes...gro. 27@30c
Door, Mineral.....doz. 60@62c
Door, Por. Jap d.....doz. 65@67c
Door, Por. Nickel....doz. $1 70@1.80
Bardsley's Wood Door, Shutter, &c...15%
Picture, Sargent's.....70&10%
Snow's Victor.....50&10%

Ladles—Melting—

P., S. & W.....35&10@40%
Reading.....50&10%
Sargent's.....60@60&10%

Lanterns—Tubular—

	Doz.	
Regular Tubular....	*$3.00*	40&5@
Side Lift Tubular...	*$3.50*	40&10d5%
Square Lift Tubular.	*$3.50*	

Bull's Eye Police—

2¾-inch flash light.....doz. $4.00
3-inch flash light.....doz. $4.50
2¾-inch regular.....doz. $3.60
3-inch regular.....doz. $3.90

Latches, Thumb—

Roggin's Latches.....doz. 28c@30c

Lawn Mowers—

See *Mowers, Lawn.*

Leaders, Cattle—

Small.....doz. 45c; *large*. 50c
Covert Mfg. Co.....45&2%

Lemon Squeezers—

See *Squeezers, Lemon.*

Lifters, Transom—

Dickson:
8 x 4 ft. x ¼ ..... ₱ 100 $10.00
Other sizes, Iron ..... 70&10&10%
O her sizes, Brass ..... 70&10%
Excelsior ..... 60@60&10%
Payson's:
Solid Grip Nos. 303 and 304, ₱ 100, $11.00
Other sizes ..... 70&10%

Lines—

Wire Clothes, Nos...	*13*	*19*	*20*
100 feet	*$2.50*	*2 25*	*2 00*
75 feet			*$1.50*

Ossawan Mills.
Crown Solid Braided Chalk 33⅓%
Mason's, No. 0 to No. 5 ..... 33⅓%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00: No. 3, $7.50 ₱ gr. 30%

Locks, &c.— Cabinet—

Cabinet Locks ..... *33⅓@40%*

Door Locks, Latches, &c.—

[Net prices are very often made on these goods.]

Reading ..... 60@60&10%
R. & E. Mfg. Co ..... 50&10@60&5%
Sargent & Co ..... 60@60&10%
S. B. & Co., Locks, Knobs, &c. 40@40&5%
Snow's Victor ..... 50&10%

Elevator—

Stowell's 33⅓%

Padlocks—

See Trade Report.
Wrought Iron, list Dec. 3, '97 ..... *75@75&10%*
Dog Collar, S. B. Co 40%
R. & E. Mfg. Co. Wrt. Steel a d Brass. 50%
S. B. & Co 40%

Sash, &c.—

Fitch's Patent ..... 65&10%
Ives' Patent ..... 65@65&10%
Payson's Perfect 70%
Payson's Signal (new list) ..... 75&10%
Reading ..... 60&10&10@70%

Machines—

Boring—

	Without Augers. Upright.	Angular.
Douglas	$2.50	$3.00
Jennings'	2.50	3.00
Millers' Falls	.....	5.75
Snell's, Rice's Pat.	2.50	2.75

Fluting—

Crown Jewel, 6 in ..... $2.50@2.75

Hoisting—

Moore's Anti-Friction Differential Pulley Block 30%
Moore's Hand Hoist, with Lock Brake. 20%

Washing—

Wayne American, No. 2, ₱ doz.	$27.50	Carload lots 10% off, freight allowed.
Western Star, No. 2, ₱ doz.	27.50	
Western Star, No. 3, ₱ doz.	30.00	
St. Louis, No. 41, ₱ doz.	68.00	

Mallets—

Hickory ..... *50@50&10%*
Lignumvitæ ..... *50@50&10%*
Tinners', Hickory and Applewood, doz ..... *50@55c*
Fiber Head, Stearns' 25%

Mattocks—

List Feb. 23, 1899 ..... *70@70&10%*

Meat Cutters—

See *Cutters, Meat.*

Milk Cans—See *Cans, Milk.*

Mills— Coffee—

Box and Side, list Jan. 1, '88 ..... *60&10@60&10&10%*
Net prices are often made on some goods which are lower than above discounts.
Enterprise Mfg. Co., list Jan. 17, '93 .. 30%
National, list Jan. 1, '94 ..... 30%
Parker's Columbia and Victor .... 60&10%
Parker's Upright ..... 30&10&40%
Swift, Lane Bros. 33⅓%

Mincing Knives—

See *Knives, Mincing.*

Molasses Gates—

See *Gates, Molasses.*

Money Drawers—

See *Drawers, Money.*

Mowers, Lawn—

Net prices are generally quoted.

	10	*12*	*14*	*16-inch*
Cheap	.....	*$1.50@$1.60, all sizes.*		
Good	*2.50*	*2.75*	*3 00*	*3.25*
High Grade	*3 50*	*3.75*	*4.00*	*4 25*

Pennsylvania and Continental ..... 60&10&10%
Philadelphia:
All Styles except A and E ..... 70&10%
Style A, all Steel ..... 60&10%
Style E, Low Wheel ..... 60&10%
Style E, High Wheel ..... 60&10%
Racine ..... 60&10&10%

Nails—

Cut and Wire. See Trade Report.
Wire Nails and Brads, Papered. List May 1, '92 .....
80&10@10@80@10&10@5%
Hungarian, Finishing, Upholsterers', &c. See *Tacks.*

Horse—

Nos.	6	7	8	9	10
A. C	25¢	23¢	22¢	21¢	21¢
					40&10&5%
American	9½	9½	9½	9½	9½ ...net
Ausable	28¢	26¢	25¢	24¢	23¢
					40&10&10%
Capewell	19¢	18¢	17¢	16¢	16&10&5%
C. B. K	25¢	23¢	22¢	21¢	21¢...40%
Champlain	28¢	26¢	25¢	24¢	23¢
					40&5&2%
Clinton Fin	19¢	17¢	16¢	15¢	14¢30&5%
Maud S.	25¢	23¢	22¢	21¢	21¢
					50&10&5%
Neponset	23¢	21¢	20¢	19¢	18¢...40%
Putnam	23¢	21¢	20¢	19¢	18¢.33⅓%
Vulcan	23¢	21¢	20¢	19¢	18¢...25%

Picture—

	1½	*2*	*2½*	*3*	*3½ in.*
Brass Head	*.90*	*.95*	*1.00*	*1.05*	*1.10 gro.*
Por. Head	*.85*	*.90*	*.95*	*1.10*	*1.15 gro.*

Nippers, See *Pliers and Nippers.*

Nut Crackers—

See *Crackers, Nut.*

Nuts—List Feb. 1, 1899.

List Feb. 1, '99.
Cold Punched. *Off*
Mfrs. or U S. Standard list.
Hexagon, plain ..... *5.10@5.20c*
Square, plain ..... *5.10@5 20c*
Square, C. T & R ..... *4.90@5c*
Hexagon, C. T. & R ..... *5.40@5.50c*
Hot Pressed:
Mfrs., U S. or Nar. Gauge Stan'd.
Square ..... *5 30@5.40c*
Hexagon ..... *5.70@5 80c*

Oakum—

Best or Government ..... *lb. 5¾c*
Navy ..... *lb 4¾c*
U. S. Navy ..... *lb. 5¼c*
Plumbers' Spun Navy *2¾c*
In carload lots ¼c lb. off f.o b. New York.

Oil Tanks—See *Tanks, Oil.*

Oilers—

Brass and Copper ..... *60&10@60%*
Tin or Steel ..... *70@70c10%*
Zinc ..... *70@70c5%*
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4; No. 3, $4.40 ₱ doz. 20%
Malleable, Hammers' Old Pattern, same list ..... 50&10%
Wilmot & Hobbs Mfg. Co ..... 70&10@75%

Openers, Can—

French ..... *doz 35c*
Iron Handle ..... *doz 60@75c*
National, ₱ gro ..... $1.75@$2.00
Sardine Scissors ..... ₱ doz. $2.00@$2.10
Sprague, Iron or Wood Handles ..... ₱ doz. 40@45¢
Stowell's ..... 75&10%

Packing—

Rubber—

Standard, fair quality .... 70&10@75%
Inferior quality ..... 75&10@80%
Extra ..... 60&5@60&10&5%
Jenkins' Standard, ₱ ℔ 80¢....25@25&5%

Miscellaneous—

American Packing ..... *9@10c lb.*
Cotton Packing ..... *13@14c lb.*
Italian Packing ..... *10½@11½c lb.*
Jute ..... *@5¼c lb.*
Russia Packing ..... *12@13c lb.*

Palls—

Creamery—

S. S. & Co., with gauges.. No 1 $5.25; No. 2, $5.50 ₱ doz 15%

Galvanized—

Inch	*10*	*12*	*14*
Water, Standard, gro	*$18 00*	*$21 00*	*$24.00*
Water, Competition, gro	*17 00*	*19 50*	*22.00*
Fire, gro	*22.00*	*25 00*	*28 00*
Well, gro	*25 00*	*25.00*	*27 00*

Pans—

Dripping—

Large Sizes ..... *lb. 4 @4½c*
Small Sizes ..... *lb. 4½@5 c*

Fry—

Standard List ..... *80@80&10%*

Roasting and Baking—

Columbian, S. S. & Co., Nos. 5, ₱ doz., $10; 10, $11.50; 20, $13; 30, $15 .... 60%
Simplex No. 08, ₱ doz. $7.00; No. 09, $8.50 ..... 60%

Paper—

Building Paper—

	Per roll
Rosin Sized Sheathing:	*500 sq. ft.*
Light wt., 20 sq. ft. to lb	*$0 35@0 40*
Medium wt., 12 sq. ft. to lb	*$0.55@0.60*
Heavy wt., extra quality	*$0.95@1.05*
Barrett's Water Proof Sheathing	*$1 35@1.75*
Medium Grades Water Proof Sheathing	*$0 80@1.25*
Deafening Felt, 9, 6 and 4¼ sq ft. to lb., ton	*$42.50*

Tarred Paper.

1 ply (roll 300 sq ft), ton $35 00@37.00
2 ply, heavy, roll 100 sq. ft *90c*
2 ply, light, roll 100 sq. ft *75c*
3 ply, heavy, roll 100 sq. ft *$1 20*
3 ply, light, roll 100 sq. ft *$1.00*

Sand and Emery—

List April 19, 1886 ..... *50¢10¢5@60%*

Parers—

Apple—

Advance	₱ doz.	$4.50
Baldwin	₱ doz.	$5.00
Bonanza	each	$5.00
Dandy	each	$7.50
Eureka, 1888	each	$16.00
Family Bay State	₱ doz.	$12.00
Hudson's Li tle Star	₱ doz.	$4.00
Hudson's Ro king Table	₱ doz	$3.50
Improved Bay State	₱ doz.	$27.00@30.00
New Lightning	₱ doz.	$5.50
Reading 72	₱ doz.	$4.00
Reading 78	₱ doz.	$7.00
Turn Table	₱ doz.	$4.50
White Mountain	₱ doz.	$4.00

Potato—

Saratoga	₱ doz.	$5.50
White Mountain	₱ doz.	$4.50

Paris Green—

Arsenic, kegs or casks..lb. 12 @12½c
Kegs of 100 to 175 pounds ..... *lb. 12½@13 c*
Kits of 14, 28 and 56 pounds ..... *lb. 13¼@14 c*
Paper boxes 2 to 5 pnds..lb. 13¼@ 14c
Paper boxes 1 pound..lb. 14 @14½c
Paper boxes ½ pound..lb. 15 @15½c
Paper boxes ¼ pound..lb 16 @16½c
Note.—These prices are sometimes shaded by jobbers.

Picks and Mattocks—

List Feb 23, 1899 ..... *70@70c5%*

Pinking Irons—

See *Irons, Pinking.*

Pins—

Escutcheon—

Brass ..... *60@60c5%*
Iron, list Nov 11, '85 ..... *60@60c5%*

Pipe, Cast Iron Soil—

Factory Shipments.

Standard, 2-6 in ..... *.60c10@65%*
Extra Heavy, 2 6 in .... *65c5@65c10%*
Fittings ..... *60c10.2 10@70%*

Pipe, Wrought—

Factory Shipments.
List February, 1899.
Plain and Galvanized:
Carload lots *50c10c10c5%*
Less than carload lots...50c10c10%
Screw and Socket Casing, ... *40%*
Inserted Joint Casing *35%*
Cold Drawn Seamless Steel Tubing .. *60%*

Planes and Plane Irons—

Wood Planes—

Molding ..... *45@45c5%*
Bench, First quality....50c5@50c10%
Bench, Second quality..50c10c5@60%
Bailey's (Stanley R. & L. Co) 50&10&10@50&10&10&10%
Gage Self Setting 35%

Iron Planes—

Bailey's (Stanley R. & L. Co) .. 50&10&10@50&10&10&10%
Chaplin's Iron Planes ..... 50&10%
Miscellaneous Planes (Stanley R. & L. Co.) ..... 25&10@25&10&10&10%
Sargent's ..... 60&10&10@70%

Plane Irons—

Standard List ..... *30c10@30c10c10%*
Buck Bros 30%
Butcher's ..... $5.00@5.25 to £
Stanley R. & L. Co... 50&10@50&10&10%
L. & I. J. White ..... 20&5@25%

Plates—

Felloe ..... *lb 3½@3¾c*
Self-Sealing Pie Plates (S. S. & Co.), ₱ doz. $2.00 ..... 50%

Pliers and Nippers—

	7	*8*	*9*	*10-in.*
Best	.....	*$5 25*	*$6.00*	*$6 50 doz.*
Good	*$2.50*	*2.75*	*3.00*	*3.50 doz.*

Acme Nippers 50%
Bernard's:
Parallel Pliers, &c 33⅓%
Paragon Pliers 50%
Lodi Pliers 50%
Elm City Fence Pliers 35%
Button's ..... 70&10&10&5%
Heller's Farriers' Pincers and Tools... 40&40&5%
Morrill's Parallel, ₱ doz. $12.00 ... 30&5%
P., S. & W. Cast Steel ..... 50&50&5%
P., S. & W. Tinners' Cutting Nippers, add 5% 10%
Utica Drop Forge & Tool Co.:
Combination Pliers ..... 40&5%
Side Cutting Pliers ..... 40&5%
Hall Patent Nipper ..... 40&5%
Round and Flat Nose Pliers ..... 40&5%
End Cutting Pliers ..... 40&5%
Royal Blue ..... 40&5%
Glass Pliers ..... 40&5%
Burner Pliers ..... 40&5%

Plumbs and Levels—

Plumbs and Levels ..... *70¢10¢10@75¢10¢10%*
Disston's 70%
Pocket Levels ..... 75&10&10@75&10%
Stanley R. & L. Co ..... 70&10&10@70&10&10%
Stanley's Duplex ..... 25&10@25&10&10%
Woods' Extension 33⅓%

Poachers, Egg—

Buffalo Steam Egg Poachers, ₱ doz., No. 1, $3.00; No. 2, $9.00; No. 3, $9.00; No. 4, $12.00 ..... 50%

Points, Glaziers' —

Bulk and 1 lb. papers.. lb. 10¼@11¼c
½-lb. papers ..... *lb. 11 @12 c*
¼-lb. papers ..... *lb. 11½@12½c*

Pokes, Animal—

Ft. Madison Hawkeye ..... ₱ doz. $3.00
Ft. Madison, Western ..... ₱ doz. $3.50
Metallic Horse Poke ..... ₱ doz. $5.00

Police Goods—

Manufacturers' Lists ..... *25@25&10%*
Tower's 25%

Polish—Metal—

Prestoline Liquid, No. 1 (¼ pt.), ₱ doz. $3.00; No. 2 (1 qt.), $9.72 ..... 40%
Prestoline Paste ..... 33⅓@40%
U. S. Metal Polish Paste, 3 oz. boxes, ₱ doz. 50¢; ₱ gr. $4.50; ½ ℔ boxes, ₱ doz. $1.25; 1 ℔ boxes, ₱ doz. $2.25.
U. S. Liquid, 8 oz. cans, ₱ doz. $1.25; ₱ gr. $12.00.
Barkeepers' Friend Metal Polish, ₱ doz. $1.75; ₱ gr. $18.00.
Wynn's White Silk, ¼ pt. cans, ₱ doz. $1.50

Stove—

Joseph Dixon's, ₱ gr. $5.75 ..... 10%
Dixon's Plumbago ..... ₱ ℔ 8¢
Fireside ..... ₱ gr. $2.50
Gem, ₱ gr. $4.50 ..... 10%
Japanese ..... ₱ gr. $3.50
Jet Black ..... ₱ gr. $3.50
Wynn's Black Silk, 5 ℔ pail ..... ₱ ℔ 12¢
Wynn's Black Silk, ½ ℔ box, ₱ doz. $1.00
Wynn's Black Silk, 5 oz. box, ₱ doz. $0.75
Wynn's Black Silk, 8 oz. liq., ₱ doz. $1.00

Poppers, Corn—

Round or Square:
1 qt ..... *gro. $6.00*
1½ qt ..... *gro. 8.00*
2 qt ..... *gro. 10.00*
Quincy Corn Popper, 1 qt., ₱ gr. $17.00; 2 qt., $22.00.

Post Hole and Tree Augers and Diggers—

See also *Diggers, Post Hole, &c.*

Potato Parers—

See *Parers, Potato.*

Pots—

Glue—

Enameled ..... *40¢10¢5@50%*
Tinned ..... *40¢5@40¢10%*

Powder—

In Canisters:
Duck, 1 lb. each *15c*
Fine Sporting, 1 lb each *75c*
Rifle, ½-lb. each *15c*
Rifle, 1-lb. each *25c*
In Kegs:
Duck, 6½-lb. kegs *$2.25*
Duck, 12½-lb. kegs *$4.25*
Duck, 25-lb kegs *$8.00*
Rifle, 6½-lb kegs *$1.25*
Rifle, 12½-lb. kegs *$2.25*
Rifle, 25-lb. kegs *$4.00*
King's Smokeless: 25&10&5%
Keg (25 ℔ bulk) $20 00
Half Keg (12½ ℔ bulk) $10.25
Quarter Keg (6¼ ℔ bulk) $5.25
Canister (1 ℔ bulk) $0.90
Case, 1 ℔ Canisters (50 ℔ bulk) $45.00
Half Case, 1 ℔ Canisters (25 ℔ bulk) $22.75
King's Semi-Smokeless: 20&10&5%
Keg (25 ℔ bulk) $10.00
Half Keg (12½ ℔ bulk) $5.25
Quarter Keg (6¼ ℔ bulk) $2.75
One Pound Can, bulk $0.50

Presses—

Fruit and Jelly—

Enterprise Mfg Co. ..... 25@30%

Pruning Hooks and Shears—See *Shears.*

Pullers, Nail—

Crown, ₱ doz. $18.00 ..... 50%
Crown Prince, ₱ doz. $15.00 ..... 50%
Giant, No. 1, ₱ doz. $18; No. 2, $16.50; No. 3, $15 ..... 40%
National, ₱ doz. $24.00 ..... 40%
Pelican, ₱ doz. $9.00 ..... 15&10%
Scranton No. 1 and 2, ₱ doz. $10.00
Scranton, No. 3, ₱ doz $9.50

Pulleys—

Hay Fork, Swivel or Solid Eye ..... doz. $1.50

Hay Fork, Stowell's Anti-Friction, 5-in. Wheel, ₱ doz. $12.00..... 40%
Hay Fork, Stearns' No.15 & 25 ₱doz.$1.75
Hay Fork, Stearns' No.35 & 45 ₱doz.$2.00
Hay Fork, Stearns' Nos. 56 & 66. ...$2.25
Hot House, Awning, &c.....60@60&10%
Japanned Clothes Line.....60@60&10%
Japanned Screw.....70&10&10%
Japanned Side .....70&10&10%
Stowell's Ceiling or End, Anti-Friction 40%
Stowell's Dumb Waiter, Anti-Friction 50%
Stowell's Electric Light..... ....33⅓%
Stowell's Side, Anti-Friction.....50%
Sash (Auger Mortise):
Common Sense, 1¼ in., ₱ doz., 18¢; 2 in., 20¢.
Empire.....1¼ in., 17¢; 2 in., 19¢
L. C.....1¼ in., 15¢; 2 in., 17¢
Ideal No. 13.....1¼ in., ₱ doz., 15½¢
Improved.....1¼ in., 17¢: 2 in., 19¢
Niagara.....1¼ in., 16¢; 2 in., 17¢
No. 26, Troy.....1¼ in., 15¢; 2 in., 17¢
Star.....1¼ in., 16¢; 2 in., 17¢
Acme.....1¼ in., 18¢; 2 in., 19¢
Tackle Blocks—See *Blocks.*

Pumps—

Cistern ..... 65@65&10%
Pitcher Spout .....75@75&10%
Pump Leathers, all sizes....gro. $6.00
Flint & Walling's Fast Mail.....60%
Myer's Pumps, low list 55%
Contractors' Rubber Diaphragm Non-chokable, B. & L. Block Co.....20%

Punches—

Revolving.....doz. $3.50@3.75
Saddlers' or Drive, good..doz. 60@65c
Spring, good quality.....$1.70@1 80
Bemis & Call Co.'s Cast Steel Drive.50&5%
Bemis & Call Co.'s Check.....55%
Bemis & Call Co.'s Spring.....50&5%
Bemis & Call Co.'s Springfield Socket..65%
Niagara Hollow Punches.....45%
Niagara Solid Punches... .....55%
Spring, Leach's Pat.....15%
Steel Screw, B. & K. Mfg. Co.....50%
Tinners' Hollow, P., S. & W. Co....20&2%
Tinners' Solid, P., S. & W.Co., ₱ doz., $1.44.....55%

Rail—

Barn Door, &c.—

Barn Door, Light..In. ½ ⅝ ¾
100 feet..... .....$1.50 $1.95 $2.60
B. D., for N. E. Hangers:
Small. Med. Large.
100 feet.....$1.50 2.00 2.50
Sliding Door, Bronzed Wr't Iron, ft. 6½c
Sliding Door, Iron Painted..3¼@2½c
Sliding Door, Wrought Brass, 1¼ in.. ..... lb. 36c..30%
Cronk's Double Braced Steel Rail, ₱ foot.....3¢
Lanes' O. N. T., ₱ 100 ft.....$2.40
Lanes' Standard, ₱ ft.....3¼¢
McKinney's None Better.....₱ ft. 2¾¢
McKinney's Standard.....₱ ft. 3¼¢
Moore's, Wr't. Bracket, Steel.....$2.40
Stowell's Steel Rail..... .....35&10%
Terry's Steel Rail .....₱ ft. 3¼¢

Rakes—

1895 or old list often used:
C. S Rakes..... .....60¢10¢5%
Malleable Rakes.....70¢10¢5%
Association List:
Cast Steel..... .....75¢5¢2%
Malleable.....70¢10%
Fort Madison Red Head Lawn.....$3.00
Fort Madison Blue Head Lawn.....$2.65

Rasps, Horse—

Disston's 75%
New Nicholson Horse Rasp.....70&10%
See also *Files.*

Razor Strops—

See *Strops, Razor.*

Reels—

Fishing—

Hendryx Aluminum, German Silver, Gold, Bronze, Silver, Rubber, Populo and Salmon, Single Action, Multiplying and Quadruple, all sizes.....25%
Hendryx Single Action Series, 102P and PN, 202P and PN, 102 PR and PRN, 202 PR and PRN, 304 P and PN, 00304P and PN, 502 and 502N, 802 and 802N, 02084N, Competitor.50%
Hendryx Multiplying and Quadruple Series, 3004N and PN, 4N and PN, 3904N, 2904P and PN, 002904PN, 0924 and 0924N, 5009N and PN.....40&10%

Registers—

For points on Mississippi River and East:
Black Japanned.....40%
White Japanned.....30%
Bronzed Finishes.....40%
Nickel Plated.....40%
Electro Plated in Brass, &c.....40%
White Porcelain.....30%
Solid Brass and Bronze Metal..25%
Note—Higher prices are quoted in territory further West.

Rings and Ringers—

Bull Rings—

	2	2½	3 Inch
Steel.....	$0.90	1.00	1.05 doz.
Copper.....	1.10	1.20	1.35 doz.

Hog Rings and Ringers—

Hill's Rings....gro. boxes, $3.25@3.50
Hill's Ringers, G. I.....doz. 50@55c
Blair's Rings..... ..... ₱ gro. $3.75@4.00
Blair's Ringers..... .....₱ doz. 55¢@60¢
Brown's Rings..... ₱ gro. $3.75@4.00
Brown's Ringers.....₱ doz 55¢@60¢
Perfect Rings.....₱ gro. $7.00@7.50
Perfect Ringers, ₱ doz.....75@80¢

Rivets and Burrs—

Copper.....40¢10@50%
Iron or Steel:
Tinners' .....60¢10@....%
Miscellaneous .....60¢10@... %

Rivet Sets—See *Sets.*

Roasting and Baking Pans—See *Pans, Roasting and Baking.*

Rollers—

Acme, Stowell's Anti-Friction ....50&10%
Barn Door, Sargent's list.60&10&10@70%
Lane's, Stay .....33⅓&5%
Stowell's Barn Door Stay...₱ doz. $1.00

Rope—

Manila, 7-16 in. and larger. lb. 9½@ 9¾c
Manila.....¾-inch lb. 10@10¼c
Manila..¼ and 5-16 in. lb. 10¼@10¾c
Manila, Tarred Rope, 15 thread.....lb. 9½@ 9¾c
Manila Hay Rope Med'm.lb9½@ 9¾c
Sisal,7-16 in. and larger.lb. 8½@ 8¾c
Sisal ....⅝-inch. lb. 9@ 9¼c
Sisal....¼ and 5-16 in. lb. 9½@ 9¾c
Sisal, Hay Rope, 2 to 10 ply.....lb. 8½@ 8¾c
Sisal, Med'm Lath Yarn.lb.. 8@ 8¼c
Cotton Rope:
Best, ¼-in. and larger..lb. 13@14 c
Med'm, ¼-in. and larger lb. 10@12 c
Com., ¼-in. and larger.lb. 8@10 c
Jute Rope.....lb. 5½@6 c

Wire Rope—

List Sept. 1, '94. All kinds.7½¢2½¢2½¢%

Ropes, Hammock—

Covert Saddlery Works.....70%

Rules—

Boxwood..75¢10¢10¢10@75¢10¢10 ¢10¢10¢10%
Ivory ...40¢10¢10@40¢10¢10¢10¢10%
Lufkin's Steel.....50&10%
Lufkin's Lumber ... .50&10%
Stanley R. & L. Co.:
Boxwood..... .....
75&10&10@75&10&10&10&10%
Ivory..... .40&10&10@40&10&10&10%

Sad Irons—See *Irons, Sad.*

Sand and Emery Paper and Cloth—See *Paper and Cloth.*

Sash Cords—See *Cord, Sash.*

Sash Locks—See *Locks, Sash.*

Sash Weights—See *Weights, Sash.*

Sausage Stuffers or Fillers—See *Stuffers or Fillers, Sausage.*

Saws—

Note.—Extra 5@10% often given on Circulars, Cross Cuts, &c., and extra 5@7½ on Hand, Butcher, &c.
Atkins' Circular.....50%
Atkins' Band 50%
Atkins' Cross Cuts 40%
Atkins' Mulay, Mill and Drag.....50%
Atkins' One-Man Saw..... .....40&10%
Atkins' Wood Saws .....40&10%
Atkins' Hand, Compass, &c..... ....40%
Disston Circular Solid and Inserted Tooth..... 50%
Disston Band 2 to 14 in. wide.....60%
Disston Band ¼ to 1¾.....70%
Disston Crosscuts.....50%
Disston Narrow Crosscuts.....55%
Disston Mulay, Mill and Drag.....50%
Disston Framed Woodsaws.....35%
Disston Woodsaw Blades.....40%
Disston Woodsaw Rods..... ..... 25%
Disston Handsaws, Nos. 12, 99, 9, 10, d100, D8, 120, 76, 77, 8.....25%
Disston Hand Saws, Nos 7, 107, 10⅓, 3, 1, 0, 00, Combination.....30%
Disston Compass, Keyhole, &c.....25%
Disston Butcher Saws and Blades....35%
C. E. Jennings & Co.'s.....25&5@30&5%
Peace Circular and Mill.....45&10%
Peace Cross Cuts, list Jan.1,'93,45&10&5%
Peace Hand, Panel and Rip....25&10&5%
Richardson's Circular and Mill...45&10%
Richardson's X Cuts, list Jan. 1, '93, 45&10&5%
Richardson's Hand, &c..... 25&10&5%
Simonds' Circular Saws.....45@50%
Simonds' Crescent Ground Cross Cut Saws.....35%
Simonds' One-Man Cross Cuts....40&10%
Simonds' Gang Mill, Mulay and Drag Saws.....45@45&5%

Hack Saws—

Disston Concave Blades.....25%
Disston Keystone.....30%
Disston Hack Saw Frames.....30%
Griffin's complete.....50@50&10%
Griffin's Hack Saw Blades....50@50&1 %
Star Hack Saws and Blades..... 15&10%

Scroll—

Barnes' No. 7, $15.....25%
Barnes' Velocipede Scroll Saw, $18...20%
Barnes' Scroll Saw Blades.....40%
Lester, complete, $10.00.....15&10%
Rogers, complete $4.00.....15&10%

Saw Frames—See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Scale Beams—See *Beams, Scale.*

Scales—

Family, Turnbull's ... ...30@30&10%
Hatch, Counter, No. 171, good quality .....doz. $17.00@18.00
Hatch, Tea, No. 161...doz. $5.75@6.00
Union Platform, Plain....$2.00@2.10
Union Platform, Striped..$2.15@2 25
Chatillon's Eureka.....25%
Chatillon's Favorite.....40%
Chatillon's Grocers' Trip Scales.....50%
Pelouze Scales—Family, Candy, Grocers' and Postal.....33⅓%
"The Standard" Portables.....45@50%
"The Standard" R. R. and Wagon...60%

Scrapers—

Box, 1 Handle .....doz $2.00
Box, 2 Handle..... doz. $3.00@4.00
Ship, No. 1, doz. $3.50; No 2, $2.25@2.40
Adjustable Box Scraper (S. R. & L. Co.) $6.00.....40&10%
Foot, W. E. Pratt Mfg. Co. ₱doz. $1.15@$1.25
Ship, R. I. Tool Co.....10%

Screen Window and Door Frames—See *Frames.*

Screw Drivers—See *Drivers, Screw.*

Screws—

Bench and Hand—

Bench, Iron.....doz. 1 in., $2.30; 1¼, $2.65; 1¼, $3.00
Bench, Wood, Beech...doz. $2.00@2.30
Hand, Wood.....30¢10@40¢10¢
Hand, Grand Rapids.....35%

Coach, Lag and Hand Rail—

Lag, Common Point, list Jan. 30, '95.....70¢15@70¢15¢10%
Coach and Lag, Gimlet Point, list Jan. 30, '95.....70¢10@70¢10¢10%
Hand Rail, list Jan. 1, '81.... 82½¢2%

Jack Screws—

Millers Falls.....50&10&10%
Millers Falls, Roller .....50&10%
P., S. & W.....40@40&10%
Sargent.....70&10&10%
Stearns' .....40&10%

Machine—

List Jan. 1, '98.
Flat or Round Head, Iron.....60%
Flat or Round Head, Brass.....50%

Set and Cap—

Set (Iron or Steel).....75@75¢10%
Sq. Hd. Cap.....70@70¢10%
Hex. Hd. Cap.....70@70¢10%

Wood—

List Nov. 10, 1898. Discounts adopted June 28, '99.
Flat Head, Iron.....82½%
Round Head, Iron.....80%
Flat Head, Brass.....77½¢10%
Round Head, Brass.....72½¢10%
Flat Head, Bronze.....72½%
Round Head, Bronze.....70%
Drive Screws.....85%
Note.—An extra 5 or 10% is often given.

Scroll Saws—See *Saws, Scroll.*

Scythes—

Grass and Grain.....50¢10%

Scythe Snaths—See *Snaths, Scythe.*

Seeders—

Raisin—

Enterprise.....25@30%

Sets—

Awl and Tool—

Brad Awl and Tool Sets:
Wood Hdle., 10 Awls.....doz. $2.00
Wood Hdle., 14 Awls, 6 Tools.... doz. $2.25@2.40
Aiken's Sets, Awls and Tools: No. 20, ₱ doz. $10.00. 60&10@60&10&5%
Fray's Adj. Tool H'dls...Nos. 1, $12; 2, $18; 3, $12; 4, $9; 5, $7.....50%
Millers Falls Adj. Tool H'dls, No. 1, $12; No. 4, $12; No. 5, $18 .... 15&10%
Stanley's Excelsior: No. 1, $7.50; No. 2, $4.00; No. 3, $5.50.....40&10@40&10&5%

Garden Tool Sets—

Ft. Madison Rakes, Shovel and Hoe.... ₱ doz.....$9.00

Nail—

Round, assorted.....gro. $3 00@3.50
Octagon .....gro. $4 00@4.75
Buck Brothers.....27½%
Cannon's Diamond Point, ₱ gr. $12...25%
Snell's Corrugated, Cup Pt.....50%
Snell's Knurled, Cup Pt..... ....66⅔%

Rivet—

Regular list.....70@70¢10%

Saw—

Aiken's Genuine.....₱ doz. $4.50@5.00
Aiken's Imitation .....₱ doz. $3.00@3.10
Atkin's Criterion.....₱ doz. $6.00
Atkin's Adjustable.....₱ doz. $6.00
Bemis & Call Co.'s Cross Cut.....30&5%
Bemis & Call Co.'s Plate.....20%
Bemis & Call Spring Hammer.....30&5%
Disston's Star and Mona ch.....25%
Hammer, Bemis & Call Co.'s new Pat.45%
Morrill's No. 1, $15.00.....40&20%
Nos. 3 and 4, Cross Cut, $13.00..40&20%
No. 5, Mill, $31.00.....40&20%
No. 10, $15.50.....40&20%
No. 11, $16.00.....40&20%
Taintor Positive, ₱ doz. $18 .....60%

Sharpeners, Knife—

Tanite Mills ₱ gross, $14.40....25@33⅓%

Shaves, Spoke—

Iron.....doz. $1 00@1 25
Wood.....doz. $1 75@2.00
Bailey's (Stanley R. & L. Co.).....50&10%
Goodell's, ₱ doz. $9.00.....15&10%
Stearns'.....40&10%

Shears—

	7	8	9 in.
Cast Iron...			
Best	*$16.00*	*18.00*	*20.00 gro.*
Good.....	*$13 00*	*15.00*	*17 00 gro.*
*Cheap.... *	*$9.00*	*10 00*	*11.00 gro.*

Straight Trimmers, &c.:
Good quality.....70@70¢10¢5%
Fair quality.....75@75¢10%
Acme Cast Shears.....40@40&5%
Davenport Cutlery Co.....60@60&10%
Heinisch's Tailors' Shears.....40@40&5%
Seymour's, list Dec. '81. 60&10&10@70&5%
Seymour's Nickel.....50&10@60&5%
Seymour's Tailors' Shears.....40@40&5%
Wilkinson's Hedge.....50%
Wilkinson's Sheep.....15%

Tinners' Snips—

Forged Handles, Steel Blades..20¢10% Malleable Handles, Laid with Steel. 40%
Forged Handles, Steel Blades, Berlin. 40¢10%
Niagara Snips.....40%
Seymour's..... .....60&10&10@70&5%

Pruning Shears and Tools—

Disston's Combined Pruning Hook and Saw, ₱ doz. $18.00.....25@25&10%
Disston's Pruning Hook, ₱ doz. $12.00 25@25&10%
John T. Henry Mfg. Company:
Pruning Shears all grades.....50&5%
Orange Shears.....50&30%
Grape.....50&10%
Tree Pruners.....75%
P., S. & W. Co.....60%
Seymour's.....60&10&10@70&5%

Sheaves—Sliding Door—

Stowell's Anti-Friction.....50%
Patent Roller.....60&10@60&10&5%
Patent Roller Hatfield's, Sargent's list. 80&10@80&10&7½
Reading..... .....70&10@75%
R. & E.....60&10@60&10&5%
Wrightsville, Hatfield Pattern....80&10%

Sliding Shutter—

Reading list.....70&10@75%
R. & E.....60@60&10%
Sargent's list.....60@60&10%

Shells—

Shells, Empty—

Brass Shot Shells, Club, Rival, Climax, 65&2%
Brass Shot Shells, first quality.....60&2%
First quality 4, 8, 10 and 12 gauge, 25&10&2%
First quality Rival, Club and Climax brands, 14, 16 and 20 gauge ($7.50 list).....20&10&2%
New Victor, all gauges.....15&2%
Quick Shot and League..... 33⅓&5&2%
Smokeless brand, 12, 10, 16 gauge.... 33⅓&10&2%
Star, Club, Rival and Climax Brands . 33⅓&10&2%
Trap brand,12 and 10 gauge.33⅓&10&2%
Primrose Club, Blue Rival, Yellow Rival and New Climax.....20&5&2%

Shells, Loaded—

Loaded with Black Powder..... 40¢5@40¢10%
Loaded with Nitro Powder..... 40¢10¢10¢5@40¢10¢10¢10%
Loaded with Semi-Smokeless Powder.....40¢5@40¢10%

Ship Tools—

L. & I. J. White 35%

Shoes, Horse, Mule, &c.—

Factory Shipments:
No. 2 and larger.....per 100 lbs., $3.35

Shot—

Drop, up to B, 25-lb. bag...$1.40@1.45
Drop, up to B, 5-lb. bag ..... .30
Drop, B and larger, 25-lb. bag.... $1.65@1.70
Drop, B and larger, 5-lb. bag..... .35
Buck, 25 lb. bag..... .....$1.65@1.70
Buck, 5-lb. bag..... .35
Chilled, 25 lb. bag.....$1.68@1.73
Dust Shot, 25 lb. bag..... 2.00
Dust Shot, 5-lb. bag..... .50
These prices are often shaded 5@10c. 25 lb. bag, especially in the West, and merchants often undersell the manufacturers.

Shovels and Spades—

Combination price to small trad are as follows:

No. 2, Polished, Sq. or Rd. Point, D or L Handle:

	A1, 1st Grade.	B8, 2d Grade.
Plain Back ...	$3.30	$3.40
Strap Back....	3.70	7.30
Cleveland Pat'n	9.00	8 10

	C3, 3d Grade.	D4, 4th Grade.
Plain Back....	$7.50	$6.90
Strap Back....	6.90	6.30
Cleveland Pat'n	7.20	6.60

All other sizes add 30c doz. Black deduct 30c doz.

Note.—A further advance of 60 cents to retailers has been made by manufacturers, and is being put into effect by jobbers generally.

Shovels and Tongs—

Brass Head .....60d&10@60d&10d&10%
Iron Head .....60d&10@60d&10d&5%

Sieves and Sifters—

Hunter's Imitation...gro $9.00@9.50
Buffalo Metallic, S. S & Co., ₱ gr.:

16	16&18	18	18&20
Blued ...$10.80	$11.40	$11.40	$12.00
Tinned.. 11.40	12.00	12.00	12.60

Eclipse.....₱ gr. $9.00@ 9.50
Hunter's Genuine....₱ gr. $10.00@10.50
Shaker (Parler's Pat.) Flour Sifters.
₱ doz., $2.00.....25%

Sieves, Wooden Rim—

Mesh 18, Nested, doz.....$0 80
Mesh 20, Nested, doz ..... .90
Mesh 24, Nested, doz 1.00

Sinks—

Cast Iron—

High list .....75d&5@75d&10%
Low list .....60d&10@60d&10@70%

Wrought Steel—

Columbus Galv'd and Enameled.50&10%
Columbus, Painted.....30&10%
L. & G... ... .55&10%

Skeins, Wagon—

Malleable Iron .....75@75d&10%
Steel ..... 4@45d&5%
I. I. B. & Co. Steel.....45%

Slates—

"D" Slates .....50d&10@50d&10d&10%
Unexcelled Noiseless Slates. .....
60d&6 tens@60d&6 tens d&5%
Wire Bound.....40d&10@50%
Double Slates, add $1 case, net.

Slaw Cutters—See *Cutters.*

Snaps, Harness—

German.....50@50d&5%
Covert Mfg. Co.:
Derby.....45&2%
High Grade.....45&2%
Jockey.....45&2%
Trojan.....45&2%
Covert's Saddlery Works:
Banner.....75%
Crown.....70%
Triumph 70%
W. & E. T. Fitch:
Bristol .....40&10%
Empire.....50&5%
National.....50&5%
Clipper.....50&10&5%
Champion.....40&10%
Victor.....60&5%
Oneida Community:
Solid Steel.....65@65&10%
Solid Swivel.....65&10@65&10@10%
Sargent's Patent Guarded.....
70&10@70&10&10%

Snaths—

Scythe.....55%

Snips, Tinners'—See *Shears.*

Soldering Irons—

See *Irons, Soldering.*

Spoke Trimmers—

See *Trimmers, Spoke.*

Spoons and Forks—

Silver Plated—

Flat Ware .....50d&10@60d&10%
Wm. Rogers M'g. Co.....50&10%

Miscellaneous—

German Silver .....60d&10%
Wm. Rogers Mfg. Co.:
18% German Silver.....60%
Rogers' Silver Metal.....50&10%

Springs—

Door—

Gem (Coil).....20%
Star (Coil).....30%
Torrey's Rod, 39 in....₱ doz. $1.10@1.25
Warner's No. 1, ₱ doz. $1.50; No. 2, $3.40.....55@55&10%
Victor (Coil).....60@10@60&10&25%

Carriage, Wagon, &c.

	Tested and Tempered	Oil Tested and Tempered
J¼ in. and wider	5	5¼
Blk. Hf Brt.	5¼	5½
Brt.	5½ lb	6

Cliff's Bolster Springs.....40&2%
Cliff's Seat Springs.....₱ pair 48¢

Sprinklers, Lawn—

Enterprise.....25@30%
Philadelphia No. 1, ₱ doz. $12; No. 2, $15; No. 3, $24.....35%

Squares—

Nickel plated.... } *List May 1, '95..*
Steel and Iron... } 70d&10@75d&10%
Rosewood Hdl. Try Square and T-Bevels .....60d&10d&10@70%
Iron Hdl. Try Squares and T-Bevels. 40d&10@40d&10d&10%
Disston's Try Sq. and T-Bevels....60&10%
Winterbottom's Try and Miter...50&10%

Squeezers—

Lemon—

Wood, Common, gro., No. 0, $5.00; No. 1, $6.50; No. 2, $10.00.
Wood, Porcelain Lined:
Cheap .....doz. $2.50@2.75
Good Grade.....doz. $3.00@3.50
Tinned Iron .....doz. $0.80@1.25
Iron, Porcelain Lined doz. $3.25@3.50
Jennings' Star.....₱ doz. $1.85@1.90
Klug.....₱ doz. $2.00

Staples—

Barbed Blind..... ..... lb. 8@8½c
Electricians', Association list..80d&10%
Fence Staples, same price as Barbed Wire. See Trade Report.
Poultry Netting.....lb. 4@4½c
Grand Crossing Tack Co.'s list....75&10%

Steels, Butchers'—

Dick's.....40%
Foster Bros'.....40%
C. & A. Hoffmann's.....40%
Nichols Bros.....50%
John Wilson's, list Sept. 1, '95.....25%

Steelyards.....40@40d&10%

Stocks and Dies—

Blacksmiths' ....35@40%
Gardner.....40&10%
Green River.....25%
Lightning Screw Plate.....25%
Little Giant.....25%
Reece's New Screw Plates.....25&30%
Reversible Ratchet.....25%

Stone—

Scythe Stones—

Pike Mfg. Co., list '95-'96.....33⅓%
Cleveland Stone Co., list Nov., '92..33⅓%

Oil Stones, &c.

Pike Mfg. Co.:
Hindostan No. 1, ₱ D...8¢
Sand Stone.....5¢
Turkey Oil Stone, Extra, 5 to 8 in.....80¢
Turkey Slips.....$2.00
} 33⅓&@33⅓&10%
Lily White Washita.....60¢
Rosy Red Washita.....60¢
Washita Stone, Extra.....50¢
Washita Stone, No. 1.....40¢
Washita Stone, No. 2.....30¢
Lily White Slips.....90¢
Rosy Red Slips.....90¢
Washita Slips, Extra.....80¢
Washita Slips, No. 1.....70¢
Arkansas Stone, No. 1, 3 to 5 in. $2.80
Arkansas Stone, No. 1, 5½ to 8 in. $3.50
} 33⅓@33⅓&10%
Tanite Mills:
Emery Oil, ₱ doz. $5.00.....50@60%

Stoners—

Cherry—

Enterprise.....25@30%

Stops, Bench—

Millers Falls.....15&10%
Morrill's...₱ doz., No. 1, $10.00; No. 2, $11.00, 40&20%
Stearns'.....30&5%

Stops, Window—

Taplin's.....45%

Stove Boards—

See *Boards, Stove.*

Stove Polish—See *Polish, Stove.*

Straps, Box—

Cary's Universal .....20&10&10%

Stretchers, Carpet—

Cast Iron, Steel Points...doz. 70@75c
Cast Steel, Polished.....doz. $2.25
Socket.....doz. $1.75

Stuffers, Sausage—

Miles' Challenge, ₱ doz. $20...50@50&5%
Enterprise Mfg. Co., list Jan. 17, '93.....
25@25&7½%
National Specialty Mfg. Co., list Jan. 1, '97.....25%

Tacks, Brads, &c.—

List Jan. 15, '99.
Carpet Tacks:
American Blued.....90d&10@90d&25%
American Tinned.....90d&10@90d&25%
American Cut Tacks...90@90d&10d&5%
Swedes Iron Tacks.....90d&10@90d&20%
Upholsterers' Tacks..90d&35@90d&40d&5%
Gimp Tacks.....90d&35@90d&40d&5%
Lace Tacks.....85d&20@85d&30%
Trimmers' Tacks.....90d&10@90d&20%
Looking Glass Tacks.....70@70d&10%
Bill Posters' and Railroad Tack.....
90d&25@90d&35%
Hungarian Nails.....80d&5@80d&10%
Common and Patent Brads.75@75d&5%
Trunk and Clout Nails:
Blued .....80d&10%
Tinned .....80d&10%

Miscellaneous—

Double Point Tacks.....90d&5@...%
Steel Wire Brads, R. & E. Mfg. Co.'s list.....50d&10@60%
See also *Nails, Wire.*

Tanks, Oil—

Emerald, S. S. & Co.....30-gal. $3.00
Emerald, S. S. & Co.....60-gal., $3.75
QueenCity S. S. & Co., 60-gal., each, $4.00; 100-gal., $6.25; 130-gal., $8.50; 200-gal., $14.00; 250-gal. $17.75

Tapes, Measuring—

American Asses' Skin .....40d&10@50%
Patent Leather.....25@25d&10%
Steel.....33⅓@40%
Chesterman's.....25@25d&5%
Keuffel & Esser Co., Steel and Metallic, new list, 1898.....35%
Lufkin's Steel and Metallic.....
33⅓@33⅓&5%

Thermometers—

Tin Case.....80d&10%

Ties, Bale—Steel.

Standard Wire.....50d&10d&5%

Ties, Wall—

Cleveland, Steel.....₱ 1000, $10.00

Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

Tire Benders, Upsetters, &c.—See *Benders and Upsetters, Tire.*

Tobacco Cutters—

See *Cutters, Tobacco.*

Tools—

Coopers'—

L. & I. J. White .....20@20&5%

Saw—

Atkins' new list.....40%
Simonds'.....33⅓%

Transom Lifters—

See *Lifters, Transom.*

Traps—Game—

Newhouse.....50d&5@50d&10%
Oneida Pattern..... 80@80d&5%

Mouse and Rat—

Mouse, Wood, Choker, doz. holes.8@9c
Mouse, Round or Square Wire..... doz. $0.85@1.00
Dandy.....₱ doz. $1.75
Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat.....₱ doz. $15.00
No. 3, Rat.....₱ doz. $5.85
No. 3½, Rat .....₱ doz. $4.50
No. 4, Mouse.....₱ doz. $4.30
No. 5, Mouse.....₱ doz. $3.00
Schuyler's Rat Killer, No. 1, ₱ gr. $13.50; No. 2, ₱ gr. $15.00
Out o' Sight, Mouse, No. 1, ₱ doz. 60¢; Rat, No. 2, $1.25; Mole, $6.00; Gopher, $1.50; Stop Thief, No. 1, $1.25; No. 2, $1.50.

Fly—

Balloon, Globe or Acme..... doz. $1.25; gro. $14.50@15.00
Harper, Champion or Paragon .. doz. $1.50; gro. $17.00

Trimmers, Spoke—

Bonney's No. 1, ₱ doz. $2.75; No. 2, $3.75
Douglas', ₱ doz. $9.00.....20%
Stearns'.....20&10%

Trowels—

Diston Brick and Pointing..... .....80%
Diston Plastering.....25%
Diston "Standard Brand" and Garden Trowels.....40%
Peace's Plastering.....25@25&5%
Rose Brick and Plastering...3=@30&10%
Woodrough & McParlin, Plaster'ing.25&10%

Trucks, Warehouse, &c.—

B. & L. Block Co.'s list.....40%
Daisy Stove Trucks, Improved pattern ₱ doz. $18.00

Tubs, Wash—

	No. 1	2	3
Galvanized, ₱ doz.	$5.25	6 00	6.75
Galvernized S. S. & Co., with Wringer Attachment, ₱ doz., No. 10, $6.35; No. 20, $6.75; No. 30.....			$7 50

Twine—

Binder—

White Sisal, 500 feet to lb..... 9¾c
Standard, 500 feet to lb..... 9¾c
Manila, 600 feet to lb 10½c
Pure Manila, 650 feet to lb.....10½c

Miscellaneous—

	BC	B.
Flax Twine—		
No. 9, ¼ and ½-lb. Balls..	*20c*	*24c*
No. 12, ¼ and ½-lb. Balls..	*17c*	*20c*
No 18, ¼ and ½-lb. Balls..	*14c*	*17c*
No. 24, ¼ and ½-lb. Balls..	*14c*	*17c*
No 36, ¼ and ½-lb. Balls..	*13c*	*16c*

Chalk Line, Cotton, ½-lb. Balls.... 18@20c
Cotton Mops, 6, 9, 12 and 15 lb. to doz .....8@9c
Cotton Wrapping, 5 Balls to lb ... 9@16c
American 2-Ply Hemp, ¼ and ½-lb. Balls ..... 9@10c
American 3-Ply Hemp, 1-lb. Balls.. 9@10c
American 3-Ply Hemp, 1-lb. Balls (Spring Twine).....10@11c
India 2-Ply Hemp, ¼ and ½-lb. Balls (Spring Twine)..... .....8c
India 3-Ply Hemp, 1-lb. Balls.....8c
India 3-Ply Hemp, 1½-lb. Balls.... 7@7½c
2, 3, 4 and 5-Ply Jute, ½-lb. Balls.6½c
Mason Line, Linen, ½-lb. Balls.. 15c
No. 2½ Mattress, ¼ and ½-lb. Balls 8½c
Wool.....5@5½c

Vises—

Solid Box.....60@60d&10%
Bonney's Saw Vises.....40&10%

Parallel—

Bonney's.....40&10%
Fisher & Norris Double Screw....15&10%
Hollands'.....40@40&10%
Massey's Perfect.....20@25%
Massey's Clincher.....40@40&10%
Merrill's.....25%
Miller's Falls.....45&10%
Parker's.....20@25%
Parker's Oval Slide.....50&10%
Parker's Victor.....30%
Prentiss.....20@25%
Sargent's.....70&10@70&10&10%
Simpson's Adjustable.....40%
Stephens'.....25@30%
Toles' Woodworking.....25%
Trenton.....40&5@40&10%

Saw Filers—

Bonney's, Nos. 2 & 3, $15.00.....40&10%
Disston's D 3 Clamp and Guide, ₱ doz. $30.....25%
Reading.....40&10%
Stearns' Common, Nos. 0, 1, 2 & 3....50%
Stearns' Rubber Jaw, Nos. 10 & 33.33⅓&%
Wentworth's Rubber Jaw, Nos. 1, 2 and 3.....40%

Miscellaneous—

Bignall & Keeler Combination Pipe Vise.....60&5%

Parker's Combination Pipe:
87 Series.....60%
187 Series.....60&5%
No. 870.....40%

Wads—Price Per M.

	Dis. 20&5%
B. E., 11 up	*60c*
B. E., 9 and 10.....	*70c*
B. E., 8	*80c*
B. E., 7.....	*80c*
P. E., 11 up.....	*$1.00*
P. E., 9 and 10.....	*1.25*
P. E., 8	*1.50*
P. E., 7.....	*1.50*
Ely's B. E., 11 and larger..	*$1.70@1.75*
Ely's P. E., 12 to 20	*$3 00@3.25*

Wagon Jacks—

See *Jacks, Wagon.*

Ware, Hollow—

Aluminum—
S. S. & Co. Reduced List..... .....40%

Cast Iron, Hollow—

Stove Hollow Ware:
Ground.....60d&10@65%
Unground.....60d&10d&10@70%
White Enameled Ware:
Maslin Kettles ...75d&10@75d&10d&5%
Boilers and Saucepans...60@60d&5%
Tinned Boilers and Saucepans.60d&5%
See also *Pots, Glue.*
Note.—See Trade Report.

Enameled—

Agate and Granite Ware, list Jan. 1, '94, revised Jan. 2, '95 .....40d&10%
Second Quality.....70&10@70&10&10%
Ironclad Enameled Ware, Old list...70%
Never Break Enameled.....50d&10%

Tea Kettles—

Galvanized Tea Kettles:

Inch.....	*6*	*7*	*8*	*9*
Each.....	*40c*	*45c*	*50c*	*60c*

Steel Hollow Ware.

Avery Spiders & Griddles .....70@70&5%
Avery Kettles.....60@60&10%
Lava.....50&5%
Never Break Spiders and Griddles.....
70@70&5%
Never Break Kettles.....60@60&10%
Solid Steel Spiders & Griddles. 70@70&5%
Solid Steel Kettles.....60@60&10%
Solid Steel Ware, Enameled.....50&10%

Silver Plated Hollow—

William Rogers Mfg. Co.....40&10&5%

Washboards—

Solid Zinc: ₱ doz
Crescent, family size, bent frame..$2.75
Red Star, laundry size, stationary protector.....$4.00
Double Zinc Surface:
Diamond, family size, stationary protector.....$2.75
Saginaw Globe, family size, stationary protector.....$2.50
Wilson, family size, bent frame...$2.50
Single Zinc Surface:
Nalad protector, family size, open back perforated.....$2.15
Diamond, protector family size, ventilated back $2.10
Saginaw Globe, protector, family size, ventilated back.....$2.00
Wilson, bent frame, family size, ventilated back $2 00
Eagle, protector, family size, ventilated back.... ....$1 85

Washers—

Leather, Axle—

Solid.....80@10@10@85%
Patent.....85@85@5%
Coil: 3/8 1 1½ 1¼ Inch.
13c 14c 15c 17c per 100

Iron or Steel -

Size bolt.... 5-16 ⅜ ½ ⅝ ¾
Washers....$5.60 4.70 3.40 3.10 2.90
In lots less than one keg add ¼c per lb., 5-lb. boxes add ½c to list.

Washer Cutters—

See *Cutters, Washer.*

Washing Machines—

See *Machines, Washing.*

Water Coolers—

See *Coolers, Water.*

Weaners—

Tyler's New Ha'ter—No. 1 ₩ doz. $3.45; No. 2, $3.70; No 3, $4.00; No 4, $4 30
Tyler'sSafety—Nos. 1 and 2, ₩ doz.$ .70; No. 3, $2.00; No. 4, $2.30.

Wedges—

Oil Finish.....*lb.* $.70@$.85c
Axe Finish.....*lb.* 3.00@3.10c

Weights, Sash

Carloads at factory.....$16.00@17.00
Less than carloads at factory.....$17.00@18.00
Note —Some Foundries are naming higher prices.

Well Buckets, Galvanized

See *Pails, Galvanized.*

Wheels Well—

8-in., $1 75; 10-in., $2.00; 12-in., $2.50; 14-in., $3.75.

Wire and Wire Goods—

Market: Nos. 6 to 16:
Br. & Ann.....70@10@75@5%
Cop'd.....67½@70%
Galv.....67½@70%
Tin'd, Tin'd list.....75@75@5%
Stone, Br. and Ann'd:
Nos. 19 to 26.....75@10@75@10@5%
Nos. 27 to 36.....75@10@5@80%
Annealed Wire on Spools.....60@10@60@10@5%
Brass, list Feb. 26, '96.....15%
Copper, list Feb. 26, '96.....20%
Cast Steel Wire.....50%
Stubs' Steel Wire.....$6.00 to £, 40%
Wire Clothes Line, see *Lines.*
Wire Picture Cord, see *Cord.*

Bright Wire Goods—

Iron and Brass, list July 1, 1899....80@10@30@10@10%

Wire Cloth and Netting—

Galvanized Wire Netting.....80@30@15%
Painted Screen Cloth per 100 ft..$1 50@ ...
See *Trade Report.*

Wire Barb—See *Trade Report.*

Wire, Rope—See *Rope, Wire.*

Wrenches—

Agricultural.....75@10@80%
Baxter's S.....70%
Coes' Genuine.....40@10@5@5@3%
Coes' "Mechanics"..40@10@10@5@5@3%
Acme.....60@60@5%
Aiken's Pocket (Bright).....$2.00@3.20
Alligator.....70@70@10%
Bemis & Call's:
Adjustable S.....35@5%
Adjustable S Ploe.....40%
Brigg's Pattern.....30@10%
Combination Black.....40@10%
Combination Bright.....40@5%
Cylinder or Gas Pipe.....55%
Extra Heavy.....45%
Merrick's Pattern.....50%
No. 3 Pipe, Bright.....50%
Boardman's.....33⅓%
Bull Dog, W. & B.....70@70@10%
Donohue's Engineer.....40@10%
Eagle.....50@10%
Hercules.....70@10@75%
Stevenson.....60@10@10%

Wrought Goods—

Staples, Hooks, &c., list March 17, '92.....85@85@10%

Yokes, Neck—

Covert Saddlery Works, Trimmed...70%
Covert Saddlery Works, Neck Yoke Centers.....70%

Yokes, Ox, and Ox Bows—

Fort Madison's Farmers & Freighters'..20%

Zinc—

Sheet.....*lb* 7¼c@8c

PAINTS, OILS AND COLORS.—Wholesale Prices.

White Lead, Zinc, &c.

Lead, Foreign white, in Oil.... 8 @8¼
Lead, American White, in Oil:
Lots of 500 ℔ or over..... 5¼@ 5¾
Lots less than 500 ℔..... @ 6¼
Lead, White, in oil, 25 ℔ tin pails, add to keg price..... @ ¼
Lead, White, in oil, 12½ ℔ tin pails, add to keg price..... @ 1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price.... @ 1½
Lead White, Dry in bbls..... @ 5
Lead, American, Terms: On lots of 500 lbs. and over, 60 days, or 2% for cash if paid in 15 days from date of invoice.
Zinc, American, dry.....₩ ℔ 3¾@ 4½
Zinc, French, S. & B. Red Seal.. @ 7½
Zinc, French, S. & B. Green Seal ..@7 7-10
Zinc, Paris, Red Seal..... @ 8½
Zinc, Paris, Green Seal..... @ 9½
Zinc, Antwerp, Red Seal..... @ 7½
Zinc, Antwerp, Green Seal..... @ 8½
Zinc, V. M. in Poppy Oil, G. Seal lots of 1 ton and over..... @10½
lots less than 1 ton..... @10¾
Zinc, V.M. in Poppy Oil, Red Seal, lots of 1 ton and over..... @ 9½
lots of less than 1 ton..... @ 9¾
Discounts.—V. M. French Zinc.—Discounts to buyers of 10 bbl. lots of one or assorted grades, 1%; 25 bbls., 2%; 50 bbls., 4%. No discount allowed on less than 10 bbl. lots.

Dry Colors.

Black, Carbon.....₩ ℔ 5 @40
Black, Drop, Amer..... 2½@ 5
Black, Drop, Eng..... 5 @10
Black, Ivory..... 10 @20
Blue, Celestial.....₩ ℔ 6 @ 8
Blue, Chinese.....30 @35
Blue, Prussian.....28 @32
Blue, Ultramarine..... 5 @30
Brown, Spanish..... ⅛@ 1
Brown, Vandyke, Amer..... 1¾@ 2½
Brown, Vandyke, Foreign..... 2½@ 5
Carmine, No. 40, in bulk.....$2.20@2.25
Carmine, No. 40, in ℔ bottles. 2.35@ ..
Carmine, No. 40, in ounce bot. 3.50@3.60
Green, Chrome, ordinary..... 2 @10
Green, Chrome, purs.....18 @24
Lead, Red, bbls. and ½ bbls..... @ 5¾
Lead, Red, kegs..... @ 6
Litharge, bbls. and ½ bbls..... @ 5¾
Litharge, kegs..... @ 6
Ocher, French Washed..... 1 @ 1¾
Ocher, German Washed..... 4½@ 5
Ocher, American.....₩ ton $8.00@17.00
Orange Mineral, English..₩ ℔ 8½@ 9½
Orange Mineral, French.....10½@10½
Orange Mineral, German..... 8½@ 8½
Orange Mineral, American..... @ 7½
Red, Indian, English..... 4½@ 8½
Red, Indian, American..... 2½@ 3
Red, Turkey..... 4½@ 8
Red, Tuscan..... 7 @14
Red, Venetian, Amer.,₩ 100 ℔ 60 @70
Red, Venetian, English.....$1.05@2.00
Sienna, Italian, Burnt and Powdered.....₩ ℔ 4 @ 9½
Sienna, Ital., Raw, Powd..... 2½@ 7
Sienna, American, Raw..... 1¼@ 1½
Sienna, American, Burnt and Powdered.....₩ ℔ 1¼@ 1½
Talc, French.....₩ 100 ℔ 90 @1.50
Talc, American.....40 @65
Terra Alba, French, ₩ 100 ℔.. 90 @1.00
Terra Alba, English.....75 @80
Terra Alba, American No. 1....65 @75
Terra Alba, American No. 2....45 @50
Umber, Turkey, Bnt. & Pow.₩ ℔ 2½@ 3
Umber, Turkey, Raw & Powd. 2½@ 3
Umber, Bnt. Amer..... 1¾@ 1½
Umber, Raw, Amer..... 1¼@ 1½
Yellow, Chrome.....10 @25
Vermilion, American Lead..... @10
Vermilion, Quicksilver, bbls. or kegs..... @61
Vermilion, Quicksilver, bags.... @62
Vermilion, Quicks'r, sm'r pkgs... @67
Vermilion, English, Import.. 70 @75
Vermilion, Artificial..... 5 @20
Vermilion Chinese.....70 @75

Colors in Oil.

Black, Lampblack, Best..... 10 @13
Black, Lampblack, Common.. 7 @ 9
Blue, Chinese..... 35 @40
Blue, Prussian.....25 @35
Blue, Ultramarine.....16 @20
Brown, Vandyke..... 7 @12
Green, Chrome..... 7 @11
Green, Paris.....17 @22
Sienna, Raw..... 7 @10
Sienna, Burnt..... 7 @10
Umber, Raw..... 6 @10
Umber, Burnt..... 7 @10

Miscellaneous.

Barytes, Foreign, ₩ ton....$18.00@20.00
Barytes, Amer. floated..... 18.00@20.00
Barytes, Crude..... 8.00@10.00
Chalk, in bulk.....₩ ton 2.00@ ..
Chalk, in bbls.....₩ 100 ℔ 35@ ..
China Clay, English..₩ ton 10.00@17.50
Cobalt, Oxide.....₩ 100 ℔ ....@ 1.76
Whiting, Common.₩ 100 ℔ .30@ .40
Whiting, Gliders..... .40@ .45
Whiting, extra Gliders'.... @ 55%
Paris Green:
Arsenic, kegs or casks.....12 @13
Kegs, 100 ℔ @ 175 ℔..... 12½@13½
Kits, 14, 28, 56 ℔..... 13½@14½
Paper Boxes, ½ @ 5 ℔..... 13½@14½
Paper Boxes, 1 ℔..... 14 @ 5
Paper Boxes, ½ ℔..... 15 @16
Paper Boxes, ¼ ℔..... 16 @17

Putty.

In barrels and ⅛ bbls..... 1 4-10@ 1½
In tubs.....1½@1 6-10
In tin cans..... 1½@ 2
In bladders..... 1¾@ 2

Spirits Turpentine.

In Southern bbls..... @39
In machine bbls..... @40

Glue.

Low Grade.....₩ ℔ 7 @ 9
Cabinet.....11 @15
Medium White.....10 @15
Extra White.....15 @25
French.....10 @25
Irish.....10 @12½

Animal, Fish and Vegetable Oils.

Linseed, City, raw.....₩ gal.39 @40
Linseed, City, boiled.....41 @42
Linseed, S ate a d Western, raw36@37
Linseed raw Calcutta seed..... @58
Lard, PrimeCity,present make43 @45
Lard, Extra No. 1..... ....35 @37
Lard, No. 1.....30 @39
Cotton-seed, Crude.....22 @22½
Cotton-seed, Summer Yellow, prime.....26½@27
Cotton-seed Summer Yellow, off grades..... ..25½@26
Sperm, Crude.....50 @52
Sperm, Natural Spring.....53 @55
Sperm, Bleached Spring.....58 @60
Sperm, Natural Winter..... @57
Sperm, Bleached Winter.....62 @65
Whale, Crude..... @
Whale, Natural Winter..... @46
Whale, Bleached Winter..... @49
Whale, Extra Bleached Win.... @52
Menhaden, Crude, Sound.....24 @25
Menhaden, Light Pressed.....29 @30
Menhaden, Bleached Winter.... @41
Menhaden, Extra Bleached....34 @ ..
Tallow, Western, prime.....42 @43
Cocoanut, Ceylon..... 5¾@ 6
Cocoanut, Cochin..... 6¼@ 6¾
Cod, Domestic.....34 @36
Cod, Newfoundland.....34 @40
Red Elaine.....28 @30
Red Saponified.....₩ ℔ 4 @ 4¾
Bank.....₩ gal. .. @27
Straits..... @28
Olive, Italian, bbls..... 58 @60
Neatsfoot, prime.....42 @45
Palm, prime, Lagos.....₩ ℔ 5¼@ 5½

Mineral Oils.

Black, 29 gravity, 25@30 cold test.....₩ gal. .. @ 7½
Black, 29 gravity, 15 cold test. .. @ 6½
Black, summer..... @ 7
Cylinder, light filtered..... 13 @15½
Cylinder, dark filtered..... 11 @16
Paraffine, 23½@24 gravity..... 8¾@ 9
Paraffine, 25 gravity..... .. @ 8¾
Paraffine, 28 gravity..... .. @ 7½
Paraffine, red, No. 1..... .. @ 8½
In small lots ½¢ advance.

THE IRON AGE.

The oldest paper in the world devoted to the interests of the Hardware, Iron and Metal Trades, and a standard authority on all matters relating to those branches of industry.

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CURRENT METAL PRICES.

JULY 5, 1899.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from Store—

Common Iron: Duty, Round, 0.6¢ ₩ lb; Square, 0.8¢ ₩ lb
1 to 1⅞ in. round and square... } ₩ lb 2.15¢ @ 2.20¢
1¼ to 4 in. x ⅜ to 1 in..... }
Refined Iron:
1 to 1⅞ in. round and square.. } ₩ lb 2.25¢ @ 2.30¢
1¼ to 4 in. x ⅜ to 1 in..... }
1¼ to 4 in. x ¼ to 5-16..... ₩ lb 2.45¢ @ 2.50¢
Angles:
3 in x ¼ in and larger..... 2.35¢
1¼ to 2¾ in. x ¼ in and heavier..... 2.45¢
1 to 3 in. x 3-16 in..... 2.55¢
1 to 3 in. x ⅛ in..... 2.65¢
Tees:
1 in..... 2.75¢
1¼ to 2¾ in..... 2.55¢
3 in. and larger..... 2.45¢
Beams..... 2.75¢
Channels..... 2.75¢
Rods—¾ and 11-16 round and sq'e. ₩ lb 2.45¢ @ 2.50¢
Bands—1 to 6 x 3-16 to No. 12..... ₩ lb 2.60¢ @ 2.70¢
"Burden's Best" Iron, base price.. ₩ lb ..... 3.00¢
Burden's "H. B. & S. Iron, base price..... ₩ lb .....2.80¢
"Ulster"..... ₩ lb .....2.80¢
Norway Bars..... 3.50 @ 4.00¢
Norway Shapes..... 4.00 @ 4.25¢

Merchant Steel from Store—

	per lb
Open Hearth and Bessemer Machinery	2.50 to 2.60¢
Toe Calk, Tire and Sleigh Shoe	2¾ to 3 ¢
Best Cast Steel, base price in small lots	7 ¢
Best Cast Steel Machinery, base price in small lots	5 ¢

Soft Steel Sheets—

¼ inch	2.85¢	No. 14	3.10¢
8-16 inch	2.95¢	No. 16	3.20¢
No. 8	2.95¢	No. 18	3.25¢
No. 10	3.00¢	No. 20	3.30¢
No. 12	3.05¢	No. 22	3.35¢

Sheet Iron from Store.

Black.

	Common American.	R. G. Cleaned American.
Nos. 10 to 16	₩ lb, 2.80	3.00¢
Nos. 17 to 21	₩ lb, 2.90	3.10¢
Nos. 22 to 24	₩ lb, 3.00	3.20¢
Nos. 25 and 26	₩ lb, 3.10	3.30¢
No. 27	₩ lb, 3.20	3.40¢
No. 28	₩ lb, 3.30	3.50¢

Russia, Planished, &c.

Genuine Russia, according to assortment..... ₩ lb 10½¢
Patent Planished..... ₩ lb A, 9¾¢; B, 8¾¢, net.
Patent Planished Sheet Steel..... ₩ lb 8½¢

Galvanized.

	B. B.
Nos. 10 to 16	₩ lb, 12¢
Nos. 17 to 21	₩ lb, 13¢
Nos. 22 to 24	₩ lb, 14¢
Nos. 25 to 26	₩ lb, 15¢
No. 27	₩ lb, 16¢
No. 28	₩ lb, 17¢
No. 29	₩ lb, 19¢
No. 30	₩ lb, 21¢

70% off.

36 in. 1¢ ₩ lb higher.

Foreign Steel from Store—

Best Cast	₩ lb 14 ¢
Extra Cast	₩ lb 16½ @ 17 ¢
Swaged, Cast	₩ lb 16 ¢
Best Double Shear	₩ lb 14 ¢
Blister, 1st quality	₩ lb 12 ¢
German Steel, Best	₩ lb 10 ¢
2d quality	₩ lb 9 ¢
3d quality	₩ lb 8 ¢
Sheet Cast Steel, 1st quality	₩ lb 14 ¢
2d quality	₩ lb 13 ¢
3d quality	₩ lb 11 ¢
R. Mushet's "Special"	₩ lb 40 ¢
" " Annealed	₩ lb 75 ¢
" " "Titanic"	₩ lb 10 ¢
Hobson's Choice XX Extra Best	₩ lb 35 ¢
Jessop Self Hardening	₩ lb 40 ¢
Seamans' "Nelson" Steel	40 ¢
Hobson Self-Hardening	₩ lb 40 ¢

METALS—

Tin—

Duty.—Pigs, Bars and Block. Free.

	Per lb
Banca, Pigs	28¼¢
Straits, Pigs	27½¢
Straits in Bars	28¼¢

Tin Plates—

American Charcoal Plates.

Calland Grade:
IC, 14 x 20..... $6.25@6.50
IX, 14 x 20..... 7.75@8.00
Melyn Grade:
IC, 14 x 20..... 6.00
IX, 14 x 20..... 7.25
Allaway Grade:
IC, 14 x 20..... 5.25
IX, 14 x 20..... 6.25

American Coke Plates—Bright—

IC, 14 x 20 ..... 108 lb ..... $4.50@4.60
IX, 14 x 20..... 5.40@5.50
IXX, 14 x 20..... 6.05@6.15

American Terne Plates—

IC, 20 x 28..... $9.00@ 9.50
IX, 20 x 28..... 11.0 @11.50

Tin Boiler Plates, American—

IXX, 14 x 26..... 112 sheets..... $10.50
IXX, 14 x 28..... 112 sheets..... 11.45
IXX, 14 x 31..... 112 sheets..... 12.65

Copper—

Duty: Pig, Bar and Ingot and Old Copper free Manufactured, 2½¢ ₩ lb.

Ingot—

Lake..... 20¢
Ansonia grade Casting..... 19¢

Sheet and Bolt—

February 2, 1899. Net.
Prices, in cents per pound.
Sheet 30 x 60.

Not wider than	Not longer than	And longer than	64 oz. & over, 50 lb. sheet, 30 x 60 and heavier.	32 oz. to 64 oz. 25 to 50 lb.	24 oz. to 32 oz. 18¾ to 25 lb.	16 oz. to 24 oz. 12½ to 18¾ lb.	14 oz. and 15 oz. 11 to 12½ lb.	12 oz. and 13 oz. 9½ to 11 lb.	10 oz. and 11 oz. 7¾ to 9½ lb.	8 oz. and 9 oz. 6¼ to 7¼ lb.	Lighter than 8 oz.
Ins.	Ins.	Ins.									
30	72	.....	22½	22½	22½	22½	23½	24½	25½	28½	31½
30	96	72	22	22	22	22	23	25½	28½	31½	
30	.....	96	22	22	22	22	24	28½	31½		
36	72	.....	22½	22½	22½	22½	24½	26½	29½	32½	
36	96	72	22	22	22	22	24	28½	31½		
36	120	96	22½	22½	22½	23½	25½				
36	.....	120	22	22	23½	24½					
48	72	.....	22	22½	23½	24½	26½	29½	32½		
48	96	72	22	22	23	25½	27½	31½			
48	120	96	22	22	24	26½	30½				
48	.....	120	22	23	25½	28½					
60	72	.....	22	23	23½	25½	28½	33½			
60	96	72	22	22½	24½	26½	31½				
60	120	96	22	23	25½	28½					
60	.....	120	22	24½	26½	30½					
72	96	.....	22	23½	25½	30½					
72	144	96	22½	24½	27½	32½					
72	.....	144	23½	25½	30½						
108	120	.....	23½	25½	31½						
108	.....	120	25½	26½							
wider than 108	144	.....	26½	28½							
	.....	144	27½	30½							

Bolt Copper, ¾ inch diameter and over, ₩ lb 2½¢
Circles, Segments and Pattern Sheets, 3¢ ₩ lb advance over price of Sheet Copper required to cut them from.
Cold or Hard Rolled Copper 14 oz. ₩ square foot and heavier, 1¢ ₩ lb over the foregoing prices.
Cold or Hard Rolled Copper, lighter than 14 oz. ₩ square foot, 2¢ ₩ lb over the foregoing prices.
All Polished Copper, 20 in. wide and under, 1¢ ₩ lb advance over the price for Cold Rolled Copper.
All Polished Copper, over 20 in. wide, 2¢ ₩ lb advance over the price for Cold Rolled Copper.

Planished Copper—

1¢ ₩ lb more than Polished Copper.

Copper Bottoms, Pits and Flats—

14 oz. to square foot and heavier, ₩ lb	26½¢
12 oz and up to 14 oz. to square foot, ₩ lb	27½¢
10 oz. and up to 12 oz., ₩ lb	29½¢
Lighter than 10 oz., ₩ lb	32½¢

Circles less than 8 in. diameter, 2¢ ₩ lb addition.
Circles over 13 in. diameter are not classed as Copper Bottoms.

Copper Wire—

Hard and Soft Drawn—B. & S. Gauge.

Nos.	0000 to 8	9 and 10	11 and 12
	20¢	20½¢	20½¢
Nos.	13	14	15	16
	20½¢	20¾¢	21¢	21½¢
Nos.	17	18	19	20
	21½¢	22¢	22¾¢	22¾¢

Seamless Brass Tubes—

Standard always Stubs' gauge, unless otherwise ordered.
Feb. 6, 1899. Net. Outside Diameter.

Stubs' W. G.	B. & S. W. G.	¼	5-16	⅜	7-16	½	9-16	⅝	¾	⅞	1	1¼	1½
4-11	3- 9	...	.....	...	.....	33	31	30	29	28	27	25	24
12	10	...	.....	37	35	33	31	30	29	28	27	25	24
13	11	...	.....	37	35	33	31	30	29	28	27	25	24
14	12	...	41	37	35	33	31	30	29	28	27	25	24
15	13	...	42	38	36	33	32	31	30	30	28	26	25
16	14	...	43	39	37	34	33	32	31	30	29	26	25
17	15	...	44	40	38	35	34	33	32	31	30	27	26
18	16	61	46	42	39	36	35	34	32	31	30	28	27
19	17	62	47	43	40	37	36	35	34	33	32	30	29
20	18-19	64	49	44	41	39	38	37	36	35	34	32	31
21	20	66	51	46	43	41	40	39	38	37	36	35	34
22	21	71	56	48	44	43	41	40	39	38	37	37	36
23	22	76	61	50	46	44	43	42	41	40	39	39	39
24	23	81	66	53	48	46	45	44	43	43	40	40	41
25	24	86	72	56	51	49	47	46	45	43	43	44	45

Copper Bronze and Gilding Tube, 3¢ ₩ lb additional

Iron Pipe Sizes—Brass

⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6 inch
36	32	29	27	21	21	21	21	21	21	23	24	25	27	29	₩ lb

Copper, Bronze or Gilding Tubes, 3¢ ₩ lb additional

Brazed Brass Tubing.

(*To No. 19, inclusive.*) Feb. 26 1896
Brown & Sharpe's gauge standard.

	Per lb.
Plain Round Tube, ¼ in. up to 2 in.	$0.35
" " ⅜ " " ¼ "	.36
" " ½ " " ⅜ "	.38
" " ⅝ " " ½ "	.41
" " ¾ " 5-16 "	.48
" " ⅞ " ⅜ "	.65
" " 1 " ½ "	1.00
" " 1⅛ " ⅝ "	1.50
Smaller than ¼ inch	Special
3 inch and larger	.40
Over 3 inch to 3½ inch, inclusive	.45
Over 3½ inch	.50

Bronze and Copper, advance on Brass List, 3 cents.
Discount from list %..... 20@25%

Roll and Sheet Brass—

(*Brown & Sharpe Standard Gauge.*)

Common High Brass	in.	in.	in.	in.	in.	in.	in.	in.
Wider than	2	12	14	16	18	20	22	24
and including	12	14	16	18	20	22	24	26
To No. 20, inclusive	.22	.23	.25	.27	.29	.31	.33	.36
Nos. 21, 22, 23 and 24	.22	.24	.26	.28	.30	.32	.34	.37
Nos. 25 and 26	.23	.24½	.27	.29	.31	.33	.35	.38
Nos. 27 and 28	.23	.25	.28	.30	.32	.34	.36	.39

Common High Brass	in.	in.	in.	in.	in.	in.	in.
Wider than	26	28	30	32	34	36	38
and including	28	30	32	34	36	38	40
To No. 20, inclusive	.39	.42	.46	.50	.55	.60	.65
Nos. 21, 22, 23 and 24	.40	.43	.47	.51	.56	.61	.68
Nos. 25 and 26	.41	.44	.48	.52	.57	.63	.71
Nos. 27 and 28	.42	.45	.49	.53	.58	.65	.75

* Special prices not less than 80 cents.
Add ½¢ ₩ lb additional for each number thinner than Nos. 28 to 38 inclusive. Discount from List..... 10%

Wire in Coils. List February 26, 1896.

Brown & Sharpe's gauge the standard.	Com. high brass.	Low brass.	Gild'g bronze and copper
All Nos. to No. 10, inclusive	$0.23	$0.27	$0.28
Above No. 10 to No. 16	.23½	.27½	.28¼
No. 17 and No. 18	.24	.28	.32
No. 19 and No. 20	.25	.29	.33
No. 21	.26	.30	.34
No. 22	.27	.31	.35
No. 23	.28	.32	.36
No. 24	.30	.34	.38
No. 25	.32	.36	.40
No. 26	.35	.39	.43
No. 27	.38	.42	.46
No. 28	.42	.46	.51
No. 29	.45	.49	.54
No. 30	.48	.52	.62
No. 31	.51	.55	.67
No. 32	.55	.59	.73
No. 33	.59	.63	.82
No. 34	.64	.68	.95
No. 35	.70	.74	1.30
No. 36	.76	.80	1.50
No. 37	1.00	1.04	1.70
No. 38	1.30	1.34	2.00
No. 39	2.00	2.00	3.25
No. 40	2.60	2.60	5.75

Discount, Brass Wire, 10%; Copper Wire, Net.
List November 16, 96.
Spring Wire, 2¢ ₩ lb advance.

Spelter—Duty: In Blocks or Pigs, 1¢ ₩ lb

Western Spelter..... 5½@6¾¢

Zinc.

Duty: Sheet, 2¢ ₩ lb.

600 lb casks..... 8.40¢ | Per lb..... 9¢

Lead.

Duty: Pigs and Bars and Old, 2½¢ ₩ lb. Pipe and Sheets, 2½¢ ₩ lb.

American Pig	4½@5¢
Bar	5¼¢
Pipe (full lengths), subject to discount 20%	6¾¢
Pipe cut lengths), subject to discount 20%	7¼¢
Tin Lined Pipe, subject to discount 20%	12½¢
Block Tin Pipe, subject to discount 20%	37½¢
Sheet (full rolls) subject to discount 20%	7¾¢
Sheet (cut rolls (subject to discount 20%	8¾¢
Old Lead in exchange, 4¢ ₩ lb.	

Solder.

½ & ½, guaranteed..... 17¢
No. 1..... 15¼@16¢

Prices of Solder indicated by private brand vary according to composition.

Antimony—

Duty, ¾¢ ₩ lb.

Cookson	₩ lb 11½¢
Hallett's	₩ lb 10½¢
U. S.	₩ lb 10½¢

Aluminum—

Duty: Crude, 8¢ ₩ lb. Plates, Sheets, Bars and Rods 13¢ ₩ lb.

No. 1 Aluminum (guaranteed over 99.75% pure), in ingots for remelting:
Small lots..... ₩ lb 37¢
100-lb lots..... ₩ lb 35¢
No. 2 Aluminum (guaranteed to be over 90% pure), in ingots for remelting:
Small lots..... ₩ lb 34¢
100-lb lots..... ₩ lb 33¢
Special casting Alloy, containing over 80% pure Aluminum:
Small lots..... ₩ lb 35¢ | 100-lb lots..... ₩ lb 30¢

Aluminum Sheet, B. & S. gauge. 50 lb or more.

	6-in. ₩ lb.	14-in. ₩ lb.	24-in. ₩ lb
Wider than			
And including	14-in.	24-in.	30-In.
Nos. 13 to 19	$0.40	$0.42	$0.45
No. 20	.42	.44	.47
Nos. 21 to 23	.44	.46	.49
No. 24	.44	.48	.51
No. 25	.45	.49	.52
No. 26	.45	.52	.57
No. 27	.46	.55	.60
No. 28	.46	.55	.62
No. 29	.47	.58	.67
No. 30	.48	.62	.75

Note.—Lots of less than 50 lb 5¢ ₩ lb extra.

Aluminum Wire, B. & S. Gauge.

Larger than No. 9	₩ lb 40¢	No. 15	₩ lb 43¢
No. 9 to No. 10	₩ lb 40½¢	No. 17	₩ lb 50¢
No. 11	₩ lb 41 ¢	No. 18	₩ lb 55¢
No 12	₩ lb 41½¢	No. 19	₩ lb 60¢
No. 13	₩ lb 42 ¢	N . 20	₩ lb 65¢
No 14	₩ lb 42½¢	No. 21	₩ lb 85¢

Old Metals.

Dealers' Purchasing Prices Paid in New York.

Heavy Copper	₩ lb 14½¢
Light and Tinned Copper	₩ lb 13 ¢
Heavy Brass	₩ lb 10½¢
Light Brass	₩ lb 8 ¢
Lead	₩ lb 3.95¢
Tea Lead	₩ lb 3½¢
Zinc	₩ lb 4½¢
No. 1 Pewter	₩ lb 17½¢
No. 2 Pewter	₩ lb 15¢
Tin Plate Scrap	₩ ton $3.50
Wrought Scrap Iron	₩ gross ton $10.00
Heavy Cast Scrap	₩ gross ton $8.50
Stove Plate Scrap	₩ gross ton $6.00
Burnt Iron	₩ gross ton $3.50